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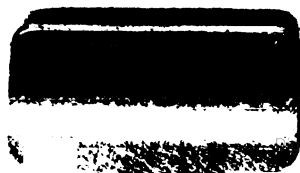
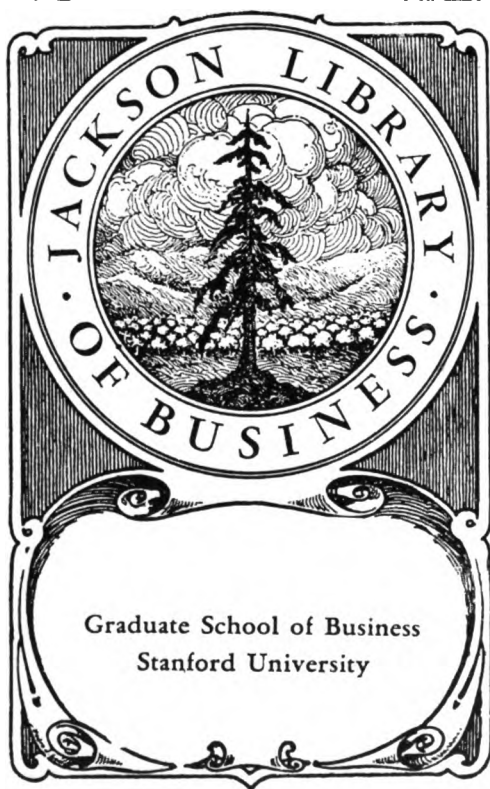
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THE
QUARTERLY JOURNAL
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ECONOMICS

VOLUME XXV

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THE
QUARTERLY JOURNAL
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RAILWAY RATE THEORIES OF THE INTER-
STATE COMMERCE COMMISSION. I.

SUMMARY

An inductive study of rate theories, 1. — Decisions of the Interstate Commerce Commission as material for such a study, 4. — I. Commission's preliminary statement of the fundamental principle of rate making, 7. — The determining factors in the Commission's decisions, 10. — II. Value of commodity as a rate basis, 11. — 1. Competitive commodities, 12. (a) in different stages of manufacture, 13. — (b) as possible substitutes for each other, 25. — 2. Non-competitive commodities, 28. — 3. Market value the criterion, 33. — 4. Social considerations, 35. — III. Cost of service as a rate basis, 40. — 1. Some special service rendered, 42. — 2. Comparison with other commodities, 50. — 3. Comparison with rates elsewhere, 53. — 4. Car load and less than car load shipments, 60. — Conclusion with reference to cost of service, 65.

THE theory of railway rates does not seem to have secured from American economists within recent years that degree of interest which a couple of decades ago was accorded to the subject. This lack of theoretical discussion is the more surprising when one considers that there has been no lack of public interest in railway matters, as is illustrated by the discussions which have taken place both within and without legislative halls. A great mass of literature, scientific

as well as popular, dealing with various phases of the transportation problem has been called forth by this public interest in railways, and yet in all this literature one finds little trace of a serious effort once more to examine and define the principles on which the prices of railway transportation are based.

The probable explanation for this neglect of the theoretical aspects of the transportation problem is to be found in the shifting of interest which has taken place from problems arising out of railway competition to those due to threatened monopoly. A couple of decades ago the fear of railway monopolies was not seriously felt, or at best was only forecasted, not considered as a thing of immediate practical importance. All dangers from that source, it was believed, were effectually forestalled by the legislative prohibition of pooling. Having disposed of the subject in this summary fashion the public turned its attention to that which was felt to be the more urgent problem, — how to prevent discriminations between competing shippers.

Railway managers, finding their efforts to maintain high rates at non-competitive points hampered, if not blocked, and compelled at the same time to continue their struggles with rival roads at competitive points, began to seek a relief from this situation by bringing about a consolidation of the competing roads. The public has accordingly been confronted with the danger of an actual railway monopoly. The question as to whether a given rate is equitable as compared with rates charged on other commodities or with rates charged to competing shippers has given way in large measure to the question as to whether or not an entire schedule of rates is too high. Such theoretical discussion of railway rates as we have had

within recent years has therefore centered around the question as to whether rates can be so adjusted as to yield only a fair return on the value of railway property and as to the best methods of determining that value.

Important as this problem doubtless is, no one would think for a moment that its solution would solve all the difficulties of rate making, or that it would furnish all the principles from which a satisfactory theory of railway rates could be deduced. The importance of a complete theory of railway rates, in harmony with correct economic principles, will never diminish as long as transportation costs continue to form a considerable part in the total costs of producing commodities, and as long as competing shippers and competing localities continue to produce the same commodities for sale in a common market.

The need of ascertaining the economic principles which should govern the actions of those entrusted with the power of rate making has even been emphasized by recent changes in railway laws and proposals for further legislation. A number of the American states have created railway commissions or have strengthened the powers of existing ones, and have placed in their hands the power and responsibility for fixing, in large measure at least, the actual rates for transportation. The Hepburn Act of June 29, 1906, increased the power over rates possessed by the Interstate Commerce Commission and a further increase in its powers has now been made. The fact that the final determination of rates does not rest with the Commission but is left to a special Court of Commerce is probably of little consequence in so far as the final results are concerned. Experience elsewhere shows, as in the case of the English Railway

Commission, and in the case of the courts of arbitration and minimum-wage boards of the Australasian colonies, that wherever special tribunals are created having authority to determine prices and wages, these tribunals, provided only that they are not subject to frequent changes in membership, tend to evolve from their own experiences a set of principles in harmony with existing economic relations and tendencies.

This fact suggests the possibility of evolving a theory of railway rates from a study of the decisions of such railway commissions as have already been in existence. Such a study would be inductive in its methods, in contrast to the deductive methods which have usually been followed by those who have written on this subject. Starting with some general principle of valuation, such as the marginal utility of the service to the shipper, the principle of joint cost, or the tax principle of ability to pay, — various writers have endeavored to show that this given principle was fundamental in the explanation of the theory of railway charges. Without raising here the question as to the validity of the deductive method when applied to the problem of railway rates, or without attempting to discuss any of the principles mentioned above, it may be stated without hesitation that such an inductive study as is here proposed should go far towards confirming or denying the conclusions derived by the deductive method of handling the problem.

The decisions of the Interstate Commerce Commission handed down during the years 1887 to 1906 appear to offer the best opportunity for such an inductive study applicable to American conditions. During those years the Commission was required to report not only its conclusions in each case heard by it but also "the findings of fact" upon which the

conclusions were based. Since the passage of the Hepburn Act the Commission has not been required to report "the findings of fact," except in cases where damages are awarded. Tho this is doubtless sufficient for practical purposes, the absence from the reports of the Commission's "findings of fact" makes the later decisions of less value to the student who seeks to follow the path of reasoning by which the Commissioners were led to their final decision.

In view of the circumstance that in a number of important cases the decisions of the Commission were over-ruled by the courts, when the question considered was not, "is this in accordance with social and economic considerations?" but rather, "Is the decision in accordance with the law and the Constitution?" one may be inclined to question whether, after all, the decisions of the Commission do reflect economic tendencies and principles and thus afford valuable material for a study of rate theories. It may be admitted at the outset that since the Commission was in duty bound to follow the decisions of the courts in subsequent cases of the same sort, the later cases do not afford as good an opportunity as do the earlier ones for obtaining the Commission's unprejudiced views as to the principles involved. These cases are, however, in a minority and even in these cases the Commission usually makes it clear that in reaching its conclusions it is merely following the orders of the court, and is not presenting its own views on the subject. In its reported "findings of fact," the student will usually have no difficulty in discovering the answer which the Commission would have given in the particular case, had it been free to follow its own reasoning to a logical conclusion instead of applying the precedents established by the courts.

In seeking to discover from a study of the decisions of the Interstate Commerce Commission what are the underlying principles in a complete theory of railway rates, it is not intended to imply that the Commissioners are infallible or that their conclusions always reflect sound economic doctrines. On the contrary the decisions are often open to criticism. A division of opinion within the Commission itself is not infrequent, and the strong pressure of conflicting interests occasionally leads to compromises intended to satisfy in a measure all parties concerned. Yet owing to the fact that in the course of two decades numerous cases involving the same principles have come before the Commission for adjudication, and that conclusions reached on the basis of unsound reasoning have failed to give satisfaction and have had to be corrected, it is believed that a study of the cases will throw much light on economic tendencies at work to establish the truth of fundamental principles.¹ Certainly experience is the only safe method for testing our theoretical conclusions, and Mill's dictum that "practice long precedes science" should hold true in this field of inquiry, as in other departments of human affairs.

The members of the Interstate Commerce Commission seem generally to have been appointed without much reference to political considerations and they have usually been men of such intellectual calibre

¹ "The facts presented in this long series of cases are kaleidoscopic. A single fact may appear a hundred times but it always comes again in different company. Never, perhaps, does exactly the same group of facts reappear in exactly the same combination or relationship. Hence each group of facts embraced in a case and each decision based upon the same has an individuality of its own. Generally speaking, no two cases are alike in every respect, and no rule of thumb can be devised by which a decision can be rendered. Yet, tho each decision has its peculiar characteristics, an analysis and comparison of many cases and decisions reveals certain common elements or underlying principles and views." — B. H. Meyer, *Railway Legislation in the United States*, p. 195.

as to command the confidence of the public. While the fact that for the most part they have been lawyers has undoubtedly tended to give a legal bias to their conclusions, membership on the Commission has usually lasted long enough to give the Commissioners familiarity with the practical side of railway affairs and with the economic considerations involved. Probably most students of American railway problems would accept Professor B. H. Meyer's statement¹ that the decisions of the Interstate Commerce Commission offer to the public "the most varied, the most widely distributed, the most concrete and the best authenticated collection of facts relating to railways in the United States that is available at the present time." From the conclusions of the Commissioners who have been obliged to study this mass of facts and pass judgment on the questions at issue, it should be possible to obtain some insight into the problem of determining the general principles of rate making.²

I. COMMISSION'S PRELIMINARY DISCUSSION OF RATE THEORIES

The original members of the Interstate Commerce Commission did not approach the work of rate adjudication without a preconceived opinion as to the principles on which railway rates should be based. In their First Annual Report, under the heading

¹ *Railway Legislation in the United States*, p. 196.

² It may not be out of place for the writer to explain the methods by which he has sought to reach the conclusions to be set forth. From a study of the abstracts of the Commission's decisions given in the annual reports he has selected those cases which seemed most likely to offer a discussion of the principles involved in rate making. 135 cases were selected and the full reports of these cases were then studied in detail and thoroughly analyzed with the purpose of ascertaining what in each case was the leading principle involved. The cases were then classified according to these leading principles.

"Classification," the Commissioners discuss the theory of railway charges. *Cost of service* as a basis of rate making they reject, not alone because of the difficulties involved in determining the cost for each commodity separately, but because they believe that such a method of apportionment "would restrict within very narrow limits the commerce in articles whose bulk or weight was large as compared with their value."

Value of service, on the other hand, they accept as the true principle of rate making.

Such method of apportionment would be best for the country because it would enlarge commerce and extend communication; it would be best for the railroads, because it would build up a large business, and it would not be unjust to property owners, who would thus be made to pay in some proportion to benefits received.¹

Just how the value of the service is itself to be measured or even estimated the Commissioners do not undertake to say. In some of the early decisions rendered by the Commission, where the statement is repeated that value and not cost of service constitutes the true principle for determining the reasonableness of a given rate, we do find something approaching to a discussion of this subject. Thus, in one of the Standard Oil cases, we are told that "the effect of transportation upon market value is taken into account by carriers in making rates,"² and this the Commissioners imply is the way to measure the value of the service to the owner of the property carried.

¹ First Annual Report of the Interstate Commerce Commission, pp. 30-32.

² *Rice v. Louisville & Nashville R. R. Co.*, 1 I. C. C. Rep. 503; 1 I. C. R. 722. (There are two editions of the bound volumes of the Interstate Commerce Commission's decisions. One edition contains only the decisions and is always referred to as I. C. C. Rep. The other edition contains Reports and Decisions and is referred to as I. C. R. The set to which I have had access contains some volumes from both editions.)

Again in the case of the *Imperial Coal Co. v. the Pittsburg & L. E. R. R. Co.*¹ the Commissioners declare that "the value of the service to the shipper, in a general sense, is the ability to reach a market and to make his commodity a subject of commerce," and a little further on they say, "In a more definite and accurate sense it consists in reaching a market at a profit, being in effect what the traffic will bear to be remunerative to the producer or dealer."

These statements all seem to imply that the value of the service is measured by the difference in the market value of the commodity at the point of shipment and at the place of unloading. Both theory and experience, however, teach us that this difference is itself determined, in the long run, by the railway rate. Thus, in the report made by the Commission as a result of its investigations of *Alleged Excessive Freight Rates and Charges on Food Products*,² we are told:—

The price of farm products at railway stations is usually the market price in Chicago, St. Louis, New York, or other markets to which shipments from such stations are usually made, less transportation charges and commissions.

The statement that railway rates are fixed in accordance with the value of the service is thus seen to be little more than a truism. In the oil and the coal cases just referred to, as well as elsewhere in the Commission's decisions, the value of the service is considered to have the same meaning as the railway man's expression "what the traffic will bear," and it is not difficult to see that what the traffic will bear, or what the service is worth depends upon whether one views this from the standpoint of the carrier, the shipper, the producer, or the consumer.

¹ 2 I. C. C. Rep. 618; 2 I. C. R. 436.

² 4 I. C. C. Rep. 116; 3 I. C. R. 94.

The term "value of service" may have some importance as an expression of an ideal relationship which should exist between railway rates, but it will not, in many instances at least, serve as a definite standard by which railway rates may be measured and compared.

More assistance in the way of solving our problem will be gained by an analysis of the Commission's decisions. In this way we shall be able to discover what concrete standards the Commissioners have themselves set up for measuring the reasonableness of a given rate when they have been brought face to face with the problems of rate making. For it may be stated at the outset that no single principle has been used by the Commission for solving all the problems of rate making; or, at any rate, if the Commissioners insist on their statement that value of service is the underlying principle in all cases, this expression is used in such a broad sense that it is made to include a variety of considerations any one of which may at times be made the leading factor in the Commission's decisions. Opinions may differ somewhat as to the best way of stating the factors involved. By the present writer they have been classified as follows: (1) the relative values of the commodities transported; (2) the relative costs of transporting the commodities; (3) the relative distances the articles are carried; (4) the relative natural advantages of location possessed by various places; (5) the special and peculiar interests of a given section or of a given class of producers; (6) the importance of maintaining competition; (7) the extent to which a given rate tends to yield a fair return on the actual capital investment.

By one or another of these standards it is believed that in all the cases coming before the Commission its members have (often times unconsciously) sought to

measure the reasonableness of a given rate. It is true that in many cases several of these standards are employed, but a careful study of the case will usually show that some one of the above considerations has been made especially prominent in reaching a conclusion; or, if the case is a very complicated one, that one standard has been applied for testing the reasonableness of the rates in one part of the case and another standard has been used elsewhere. This is practically equivalent to treating the matter as two or more cases, and it will be so treated in the following pages. In those instances where one standard of comparison has been made the primary test of the equitableness of a given rate but there are other considerations of secondary importance, the case has, of course, been treated under the primary heading.

In the following pages we shall consider separately each of the above-mentioned standards of comparison and shall endeavor to show the extent to which the Interstate Commerce Commission has made use of it as a basis for determining the reasonableness of rates. After this review it will be our task to endeavor to harmonize these diverse and sometimes apparently conflicting principles, and to see if their relations to each other cannot be so adjusted as to make it possible to evolve a complete theory of rate making.

II. VALUE OF COMMODITY

In the discussion of rate theories which is found in the First Annual Report ¹ and to which reference has already been made, the Commissioners declare that "the value of the article carried [is] the most important element in determining what shall be paid upon

¹ Pp. 30-32.

it." Practically the same position is taken in the Second Annual Report,¹ where it is said that the apportionment of rates according to the value of the service "would seldom be burdensome to articles of high value, but it would relieve cheaper articles from burdens which, if apportioned strictly to the cost to the carriers of their transportation would render carriage for considerable distances out of the question."

The Commissioners are careful to state that the value of the commodity is not the only consideration which enters into value of service. The emphasis which they place upon it, however, as being "the most important element" in determining the value of the service makes it desirable that we should first take up for consideration those cases in which value of commodity is made the standard for measuring the equity of a given rate.

1. *Competitive Commodities*

The first group of cases of this sort consists of those in which the Commission has had to deal with the rates on commodities closely related in character and frequently competitive with each other in the open market. This group may further be divided into two sub-groups. The first sub-group includes articles offered for transportation in different stages of manufacture. In such cases the relative rates charged will often determine the place where the later stages of manufacture shall be carried on. In the second sub-group, the articles do not represent the same commodity but are nevertheless substitutes for each other and the transportation rates might easily determine which commodity should be used.

(a) In the first sub-group the case¹ which first demands consideration has to do with the rates to be charged on "hub-blocks" for use in the manufacture of wheeled vehicles "but upon which only so much labor has been expended as is needful to put them into condition for seasoning." The carrier, made defendant in this proceeding, had been classifying these blocks in the fifth class with unfinished wagon materials. The Commissioners ordered a reduction to sixth class and required that the same rates be applied as were given to lumber. A difference in the values of the commodities is given as a reason for their decision. A car load of hub-blocks was worth only \$280, while a car load of the hubs, turned but not yet mortised, would be worth about \$5000. A case² of the same general character was that which had to do with the relative rates on partially manufactured furniture and on the finished commodities. Complaint was made that the carriers were charging the same rate (30 cents per 100 pounds) on chair materials shipped from Detroit to Omaha as they were charging for the finished chairs. In the case of the materials, the value at Detroit was only \$7 per dozen chairs, while the value of the finished chairs was \$28 per dozen at Detroit, and \$30 at Omaha.

The counsel for the roads raised two points of interest in connection with the claim of the defendant that owing to the lower value of the chair materials lower rates should be given than on the finished chairs. (1) Owing to the fact that a car load of chair materials weighed from 25,000 to 30,000 pounds while a car load of finished chairs weighed only 7,000 pounds, it

¹ *F. L. Hurlburt v. L. S. & M. S. R'y Co.*; 2 I. C. C. Rep. 122; 2 I. C. R. 81.

² *Murphy, Wassy & Co. v. Wabash R. R. Co. et al.*, 5 I. C. C. Rep. 122; 3 I. C. R. 725.

was said that the value of a car load of materials was about the same as that of a car load of the finished articles, and this he argued warranted charging the same rate *per 100 pounds* on the two shipments. (2) It was said that the proper basis for making rates was the "increased value of such car loads after their arrival at Omaha."¹

The Commission held: (1)² "that the proper basis would seem to be their value at Detroit when shipped"; (2) that while the carriers were justified in making such charges as would yield "a greater compensation in the aggregate for hauling a large than a small car load, as a general rule the rate per 100 pounds should be less in the former than in the latter case." The Commission, therefore, left the rates on the finished commodities at 30 cents per 100 pounds and fixed the rate on wooden materials at not more than 20 cents per 100 pounds.

Precisely the same situation was revealed in another case³ in which the Commission expressed the opinion that unfinished bed-room sets should be given a rate of 85 per cent of that granted to the finished articles, because of "the difference in value of the unfinished and finished furniture . . . and the greater tonnage per car load which can be hauled of the former." In both of these cases it will be noted that cost of service as well as value of commodity is cited as a reason for the difference in the rates.

The same principles applied in the above cases also find expression in several other cases where the ques-

¹ This seems to be a logical application of the Commission's theory that value of service is measured by the "effect of transportation on market value."

² For the purpose of clearly distinguishing the various points in the Commissioners' arguments I have numbered them in this case as in many succeeding cases.

³ *Potter Mfg. Co. v. Chi. & Grand Trunk R'y Co. et al.*, 5 I. C. C. Rep. 514; 4 I. C. R. 233.

tion is raised as to what shall be the relation of rates on raw or semi-finished materials as compared to those on the finished commodities. Thus the Commission refused ¹ to give its approval to the practice of certain carriers in classifying hatters' furs and fur scraps and cuttings as double first-class with correspondingly high rates, while at the same time hats, the finished product, were placed in the first class of the Official classification. Here again other considerations, such as competition and cost of service, enter into the decision; but value of commodity is apparently the consideration chiefly held in mind. The Commissioners say:—

We should be inclined to say that fur scrap and cuttings must be rated higher than second class were it not for the claim of the defendants that this would lead to fraud in the billing of fur and fur scraps. . . . Hatters' fur, the raw material, does compete in a way with hats, the finished product, and we do not think that, under the circumstances of this case, the rate upon the raw material ought to be greater than upon the finished product.

On the same grounds the Commission refused ² to allow leather scraps to be classed with sole leather and to be given the same rates, when the complainant in the case had proved that the value of the leather scraps was only from 2 to 5 cents per pound while sole leather was valued at from 25 to 45 cents per pound. Even in this case the Commission adds a cost of service argument to its decision in stating that "liability to damage in case of scrap is practically nothing."

The Commission also decided ³ that, altho carriers were not obliged to adopt such a classification as

¹ *Myer v. C. C. C. & St. L. R'y Co. et al.*, 9 I. C. C. Rep. 78.

² *Newman v. N. Y. C. & H. R. Co. et al.*, 11 I. C. C. Rep. 517.

³ *National Machinery & Wrecking Company v. P. C. & St. L. R'y Co. et al.*, 11 I. C. C. Rep. 581.

would provide one rate on new dynamos and another on second-hand ones, in case the second-hand dynamo was bought for the purpose of being converted into junk and had actually no other value, carriers were bound to apply rates offered on scrap iron. "Its value is no greater than the selling price by the pound of the metal which it contains, not indeed as great since a certain amount of labor must be expended before even that price can be obtained." Here again the logic of the value of commodity argument is somewhat disturbed by the statement that a dynamo, as such, can properly be charged a high rate because it requires great care in handling.

What appears at first as a perversion of the underlying principle of the above cases, viz. that raw materials should take a lower rate than the commodities made therefrom, is illustrated in a decision¹ of the Commission that window shades could not lawfully be charged a higher rate than the material from which they were made. The decision was, however, true to the value of commodity principle, for the evidence clearly showed that the material (window hollands) was pound for pound more valuable than the finished commodity. "The items of similar bulk and weight, less value and risk of carriage, and important volume of traffic, are all in the direction of giving window shades a classification as low as that which is provided for window hollands." The carriers had been classifying manufactured window shades in class one and window hollands in class three of the Official Classification. The Commission ordered them both into class three. The U. S. Circuit Court refused to enforce this order of the Commission on the ground that it "applied to shades having very high value as

¹ Page et al. v. D. L. & W. R. R., 6 I. C. C. Rep. 148; 49 I. C. R. 525.

well as to the cheaper varieties." Accordingly the Commission on a re-hearing of the case ¹ issued a new order which permitted the carriers "to restrict their transportation of window shades at third-class rates to those limited to a specified maximum valuation at the time of shipment." The effect of the court's ruling was, therefore, to strengthen rather than to weaken the value of commodity principle.

A case ² similar to the above was that in which the Commission decided that a rate on box shooks higher than that on lumber was not justifiable, since investigation showed that a car load of lumber weighed about 36,000 pounds and was worth from \$350 to \$800, while a car load of box shooks weighed about 30,000 pounds and was worth only \$220.

Several cases coming before the Commission have had to do with the relative rates on the principal cereals and their products. In most of these cases the Commission has based its decisions mainly on a consideration of the competitive conditions surrounding the shipping and marketing of grain and its products, but to a slight extent it has made the difference in value between the grain and its products a reason for allowing higher rates on the latter. The Commission's whole attitude on the question is well expressed in its treatment of the matter of a differential between corn and corn meal shipped from Missouri river points to Louisiana.³ Its statement is as follows:—

The Commission has, as a rule, approved a reasonable difference between any raw material and the manufactured article, but when the amount of labor, and increased value, and extra risk, were so comparatively insignificant as upon grain whole and grain ground,

¹ 6 I. C. C. Rep. 548.

² *Michigan Box Co. v. F. & P. M. R. R. Co. et al.*, 6 I. C. C. Rep. 335.

³ 11 I. C. C. Rep. 227.

it has not found that any very great extra freight charge was warranted by the needs of the carrier, as a protection to any industry or just to the consumer, and wherever the carrier has seen fit to waive its privilege of a slightly advanced rate for the carriage of its product, and the rate on the raw material was reasonably low, the Commission has not interfered with that discretion.

A differential of 3 cents per 100 pounds above the freight charges on corn was allowed in the transportation of corn meal from the Missouri river to points in Texas,¹ and a differential of 5 cents was allowed to the Pacific coast.² In these cases, as in most of the others which we have considered, the carriers' cost of service arguments based on the greater risk involved and the greater expense of handling the manufactured product were given some degree of recognition by the Commission, tho less emphasis was placed upon these considerations than upon the difference in the values of the commodities.

Milk and cream may for all practical purposes be regarded as the same article in different stages of manufacture and the Commission has recognized the difference in their values as a sufficient justification for charging 45 cents per can for transporting cream while only 35 cents were charged for carrying milk.³ At the same time the reasoning employed by the Commissioners in reality resolves itself into a cost of service argument.

The element of value in the commodity transported forms a proper consideration to be taken into account in the establishment of a rate. The liability of the carriers as an insurer of freight against all loss except such as is occasioned by the act of God or of the public enemy, is elementary, and the greater the value the greater the risk.

¹ 11 I. C. C. Rep. 220.

² 11 I. C. C. Rep. 212.

³ N. W. Howell et al. v. N. Y., L. E. & W. R. R. Co. et al., 2 I. C. C. Rep. 272; 2 I. C. R. 162.

Two cases which bring out very clearly the influence which value of commodity should have, in the opinion of the Commissioners, in determining the reasonableness of railway charges have to do with the relative rates on live stock and packing-house products. At the same time these cases illustrate the limits fixed by competition to the application of this principle.

In the first case, a complaint instituted by the Chicago Board of Trade,¹ the defendants, a number of carriers in the Middle West, were in the habit of giving lower rates on packing-house products from Sioux City, Iowa, and other western packing centers to Chicago than they gave to live hogs when shipped to the same market. They defended their practice on the grounds of (1) higher cost of service in the case of live hogs; (2) larger traffic in packing-house products and the materials used in these houses, such as salt, ice, etc., which furnished return cargoes in part; and (3) the necessity of protecting vested interests, since large investments had been made in the western packing industry, based on the expectation that lower rates were to be given its products.

None of these reasons was found by the Commission to be borne out by the evidence submitted or to be sufficiently important to warrant the discrimination in rates. On the contrary, the Commissioners declared:—

As articles of commerce, the evidence shows without conflict, that the live hog and its products are in direct competition with each other. This only brings out in a stronger light the discrimination that is made against the traffic in the live hog as compared with the traffic in the product. Of the two the product is very much more valuable; it is transported at more expense to the carrier.

¹ Chicago Board of Trade v. C. & A. R. R. et al., 4 I. C. C. Rep. 153; 3 I. C. R. 233.

The evidence submitted tended to show that the value per 100 pounds of live hog was from about \$4.50 to \$4.75, while an equal weight of the packing-house product was worth about \$7.50.

In view of the very great difference in the values of the two commodities, we might naturally expect that much lower rates on the live animals than on the products would be ordered by the Commission. But owing to the keen competition existing between the Chicago packers and those of the western cities, the Commission did not feel warranted in going so far. They contented themselves with a notice to the carriers that the "rates made by them on live hogs should not be greater than upon packing-house products."

In the second case of this sort with which the Commission was called upon to deal, practically the same complaint was made, the complainant being the Chicago Live Stock Exchange.¹ Some new conditions in this case, however, demand our consideration.

During the years intervening between the earlier Chicago Board of Trade decision and the hearing of this case several of the carriers which were defendants in the former case had extended their lines westward beyond the Missouri river. Other lines, like the Chicago & Great Western Railway, extended only to that river. The roads extending beyond the river were inclined to establish such rates as would favor the traffic in live stock, since in this way shipments to Chicago would be entirely over their own lines. The roads terminating at the river were, on the other hand, inclined to establish such rates as favored the traffic in live-stock products; since if the animals were unloaded and slaughtered at the Missouri river towns,

¹ Chicago Live Stock Exchange v. C. & G. W. R'y Co. et al., 10 I. C. C. Rep. 428.

these lines would share in the shipment of the products to Chicago and the East. The real cause of the discrimination was, therefore, competition between the lines extending beyond the Missouri river and those terminating at the river.

The testimony offered before the Commission showed that the giving of lower rates on live-stock products than on the live animals was due to the action of the Chicago & Great Western Railway whose lines terminated at the Missouri river. The competition of this line had forced the other roads, so it was claimed, to depart from the order issued by the Commission in the Board of Trade case. The defense offered by the Chicago & Great Western was lower cost of service in the case of the live-stock products. The evidence, however, showed that the real purpose of the discrimination was to secure for this carrier a larger share of the traffic in the products of live stock than it could otherwise hope to obtain.

The Commission found little evidence tending to support the claim of the Chicago & Great Western that the cost of service was higher for the live animals than for their products. The officials of nearly all the other roads represented in the investigation expressed the opinion that the rates on live stock should not be higher than those on animal products, while some of the officials claimed that the live-stock rates should be lower than for the meat products. The Commissioners themselves said: "Altho we think cost of transportation is a very important element, we do not consider it a controlling element in this case." They ordered the carriers to give such rates on live stock as should not *exceed* those on the live-stock products. Their decision rested on the value of commodity principle, expressed as follows: —

In determining what the relation should be between the rates charged for transporting two different freight articles, value is often an important factor, but this is not alone because of the greater risk connected with the transportation of the more valuable article. Improvements made during recent years in the road-beds and equipment of carriers have rendered the item of risk in many cases of little consequence. The value of the article is important, principally, because of its bearing upon the value to the shipper of the transportation service; and the value of the service is, and has always been considered by carriers, one of the important elements to be considered when fixing the rates to be charged for transportation. As stated in the findings of fact, live-stock products, compared with the live animals, are about twice as valuable.

As in the Board of Trade case, so here also, the Commission was not able to follow this argument to its logical conclusion by requiring lower rates on live animals than on packing-house products. The nature of the competition between these two classes of commodities was such that equal rates seemed to be required. In describing this competition, the Commissioners made it evident that the emphasis which they placed on the relative values of the commodities was due to the fact that these values were believed to reflect the competitive relationship which existed between them. They said:—

Another very important factor is the relation existing between the articles transported. If the relation is remote, such as that between flour and silk, a change of a few cents per hundred pounds in the rates charged for transporting one of them may not affect traffic in the other; but if the relation is close, such as that between raw material on the one hand and goods manufactured from that material on the other, a slight change in the adjustment of transportation charges between the two articles may be sufficient to close manufacturing plants at some points and increase the output of plants elsewhere. And it is because of this difference that some discriminations made by the carriers are justifiable under certain circumstances.

One of the cases most difficult to solve which has come before the Commission is that of the *Grain*

*Shippers' Association of Northwest Iowa v. the Illinois Central Railroad Company et al.*¹ The case presents too many elements to enable us to consider them all under a single heading, but value of commodity plays such an important part in the discussion that the case demands our attention here.

The rates complained of were those on corn, wheat, and other grains from Sioux City and other points in northwestern Iowa to Chicago and to points on the east bank of the Mississippi river. The complainants urged that the rates on these grains were too high to enable them to be raised and marketed with a profit. It was said that the rates were disproportionately high as compared to those on other commodities having a higher value and whose costs of transportation were higher. Particular emphasis in this connection was placed on the relatively low rates given on hogs and cattle, and it was said that the adjustment of rates was such that it favored the farmers who fed their grain and shipped the live stock and thus discriminated against the small farmers and tenants who could not afford to buy stock for feeding. When the case is looked at in this light it will be seen that it involves the question as to what shall be the rates on raw material (grain) as compared to those on its manufactured products (hogs and cattle).

The answer of the defendants to the complaint that rates on grain were excessive as compared to those on other commodities was that this complaint might have some justification if rates were made under "ideal conditions," but that under the "actual conditions" with which the carriers had to deal, where competition was the "controlling consideration," such rates as were asked for by the complainants

¹ 8 I. C. C. Rep. 158.

were impossible. In this connection the Commissioners inquired of the traffic managers present "upon what basis a freight rate was made, what elements entered into it," and their questions seem to have been particularly directed towards finding out what part the value of the commodity played in determining the rate charged for its transportation. The answers of the traffic managers, as condensed and set forth by the Commissioners, were as follows:—

In ideal traffic conditions certain elements would be taken into account in establishing a freight rate. These, among others, would be value of the commodity, the cost of service, the volume of traffic, etc. Under these conditions the witnesses rather thought that value might be a pretty important factor in determining the freight rate. Under actual conditions, while an attempt was made to regard these various considerations, as a rule, the controlling influence was competition. The witnesses expressed the opinion that the rates on grain would be, if such ideal conditions could obtain, too low¹ in proportion to the rates on manufactured articles, but it was said that such ideal conditions did not and could not obtain. . . . In a word, the freight tariff was made as it was, not because it ought to be that, but because it must be that. The railways obtained all they could, which was still too little. The witnesses all said that the grain rates in question were entirely the result of competition.

The Commissioners were inclined to agree with the traffic managers in their statement that the rates in question were established as a result of competition, but they were not willing to admit that the carriers were justified in neglecting the other elements which should be considered in the fixing of freight rates. This was particularly true of the value of the commodity. The Commissioners say:—

Value is undoubtedly an element which should be considered in the fixing of rates. It is often a most important element but

¹ The reference here seems to be to rates on grain from Minneapolis and Kansas City to Chicago, which the testimony showed were much lower than from northwest Iowa, owing to excessive competition at those points.

plainly cannot be made an arbitrary standard independent of all other considerations. This case certainly shows that in the opinion of these traffic men produced as witnesses, the present tariffs do not represent an ideal relation in rates between different commodities, and perhaps fairly shows that if such ideal relations could be obtained the rates on grains are too high as compared with those on some other commodities, especially manufactured articles.

It was, however, the relation between the rates on grain and those on live stock which seemed to the Commissioners especially unfair.

Whether the grain shall be shipped to market or fed in the vicinity of where it is raised depends, in a measure, upon the freight rate upon the grain and upon the live stock. For this reason there ought to be, to some extent, a correspondence between the rates upon these commodities, and a decrease in the rate upon one ought ordinarily to be accompanied by a decrease in the other.

An investigation of the changes in rates between 1887 and 1898, when the case was heard, showed, however, that the decline in the rate on live stock had been much greater than in that on grain. "We are of the opinion, too," say the Commissioners, "that the rate on live stock at the present time is lower in proportion to the service rendered than that on grain."

Without making any formal order in the case, the Commissioners recommended a considerable lowering of the rates on grain from Sioux City and surrounding territory to Chicago. In reaching this conclusion the members of the Commission were undoubtedly influenced mainly by the showing made by the complainants as to the relative rates on grain and live stock when compared with the relation between their market values.

(b) Coming now to the second sub-group of cases, dealing with commodities which are competitive in

character, we shall notice, first, a case which had to do with the relative rates on Pearline and common soap.¹

The carrier had undertaken to place Pearline in class four of the Southern classification and to charge a rate of 73 cents per one hundred pounds between New York and Atlanta. Common soap was placed in class six, which under ordinary conditions would have given it a rate of 49 cents to Atlanta. Owing, however, to the existence of water competition between New York and Atlanta, common soap had received a special rate to Atlanta of 33 cents per 100 pounds.

The presentation of the arguments in the case brought out the following points: (1) Pearline was an article in general use and was used for the same purpose as was common soap, with which article it was in direct competition. (2) The market value of Pearline was about twice that of the common soap. (3) The risks involved in its carriage were somewhat greater than for the soap. (4) Water competition at Savannah made necessary a lower rate on soap to Atlanta than to other points, but Pearline, owing to risks from dampness, could not be shipped by water, hence no special rate was given it to Atlanta.

The Commission held that the discrimination against Pearline was too great, that it should be placed in the fifth class and be given a rate of 60 cents per 100 pounds. Common soap was to remain in the sixth class and pay the full rates of that class, except to Atlanta, where the competition of a through rail and water route made the special rate of 33 cents per 100 pounds necessary.

In explaining the reason for allowing a difference in the rates on the two commodities, the Commissioners say: —

¹ *James Fyle & Sons v. East Tenn., Va. & Ga. R. R. Co.*, 1 I. C. C. Rep. 465.

The very great difference in the value and also the risk in case of serious accident in the transportation of Pearline as compared with common soap would seem to indicate that there is ground for a reasonable difference in the freight rates on these two articles.

The decision seems to rest chiefly on the difference in the values of the two commodities, tho it should be noticed that two other considerations furnish a partial explanation, viz. the risks (*i. e.* the cost) of transportation and, in the case of the special Atlanta rate, the existence of water competition.

Value of commodity is again the controlling, tho not the exclusive, consideration in the case of *Coze Bros. v. The Lehigh Valley R. R. Co.*¹ The complainants had asked that the same classification and rates be given to anthracite coal that were given to the bituminous product.

The Commissioners declined to make this concession on the grounds that (1) the value of the anthracite coal was greater and therefore the service of transporting it was worth more to the shipper; (2) the shorter distance from the mines to the principal markets in the case of anthracite rendered its transportation per ton-mile more expensive. This latter argument, it will be noticed, is based on cost of service.

The Commission, however, ordered that some reduction be made in the rates on anthracite, since rates on coal are generally less than on such commodities as iron ore and pig iron, whose value is greater, while the Lehigh road had in force higher rates on coal than on these commodities. The evidence showed, too, that this road had but recently raised the rates on coal, after having for two years maintained lower rates on the anthracite coal than on these iron products. The long maintenance of the lower rates

¹ 4 I. C. C. Rep. 535; 3 I. C. R. 460.

on coal satisfied the Commissioners that their rates were profitable to the carrier.

Another coal case which falls within this group is that of *McGrew v. Missouri Pacific R'y Co.*¹ The Commission decided that the carrier might properly make a distinction in classification between soft and lump coal, used only for domestic purposes, and "mine-run, nut, mill and slack" coal used only for steam purposes, and might give a lower rate to the latter class. Such a distinction clearly rests for a justification on differences in the values of the two commodities.

In the case of *Wolf Bros. v. Alleghany R'y Co. et al.*² it was decided that since paper bags were made of cheaper paper, were packed in a different way, and were used for a different purpose than were merchandise envelopes, there was no objection to giving these bags a lower classification and lower rates than were accorded to the merchandise envelopes, even tho the complainant called these envelopes paper bags and was able to show that the cost of service in transporting them was less than for the ordinary envelopes.

Still another concession to value of commodity over cost of service appears in one of the Standard Oil Cases.³ The carrier was ordered to charge only on the basis of the weight of the oil carried in barrels when it charged for oil only, if carried in tanks, and not to charge barrel shipments on the gross weight.

2. *Non-Competitive Commodities*

The second class of decisions in which the value of the commodity is selected as the controlling consideration in the determination of the railway rate has to do with articles which, tho not of the same kind and

¹ 8 I. C. C. Rep. 630.

² 7 I. C. C. Rep. 40.

³ *Rice, Robinson & Winthrop v. Western N. Y. & Penn. R. R. Co.*, 4 I. C. C. Rep. 131; 3 I. C. R. 162.

not directly competitive, are nevertheless so similar in character as to warrant similar treatment.

In the first case¹ of this sort the Commissioners refused permission to the defendant carrier to classify railroad ties in class five (manufactured wooden commodities) while at the same time it classified lumber and other unfinished wooden articles in class six, and in addition gave a special low rate to lumber. The defendant claimed as a reason for placing ties in a higher class than lumber that "tie shipments are less in quantity and require switching for single cars, whereas in the case of lumber, we switch a large number of cars together." The Commission rejected this cost of service argument, not because it was based on cost of service and was therefore incorrect in principle but because the statement was "not convincing."

No special reason appears in the evidence why tie shipments are not likely to be as large per day as lumber shipments, therefore the distinction cannot be sustained on the ground of greater cost of movement, for no such greater cost is established.

The Commissioners maintained that lumber and ties were so alike in character and the conditions for transporting them were so similar that they should be classed alike and that such discrimination as was shown by the defendant was not justified by the relative values of the two commodities.

In another case² the Commissioners held that it was unjust and unreasonable to put raisins in a higher class, taking a higher rate, than was given to dried fruits, since the market value of the raisins was uniformly lower than that of California dried fruits.

¹ *Reynolds v. Western N. Y. & Penn. R'y Co. et al.*, 1 I. C. C. Rep. 393; 1 I. C. R. 686.

² *Martin v. Southern Pacific Co. et al.*, 2 I. C. C. Rep. 1; 2 I. C. R. 1.

The same conclusion was reached with reference to the classification of celery.¹ The carriers were ordered to give it the same classification and rates as were given to cauliflower, asparagus, lettuce, whether shipped in car load or less than car load lots. It was said that since the original classification was made, celery had come into much more common use.

Its production has greatly increased and its market value has declined. It certainly is no more a table luxury than some of the vegetables which have a lower class in the Western classification.

A rather curious attempt to adjust rates in mathematical proportion to the values of the commodities is furnished by a case² coming before the Commission where the question was as to the relative rates on cabbages and potatoes. The Commissioners said:—

As the weight of a barrel of cabbage is three-fourths of that of a barrel of potatoes and its price or value only one-half (two fourths) it would seem that there is a difference of one-fourth in favor of cabbage. This is upon the assumption that bulk and value would operate equally in proportion to amount in enhancing rates. Our conclusion is that the rate on cabbage from Charleston should be one-fourth less than the rate on potatoes.

It should be said, however, that this reasoning was only incidental to a general discussion which dealt with more important matters, and it would be a mistake to lay much emphasis upon it as an expression of the views of the Commissioners.

In order to determine the importance which should be attached to the value of a commodity in fixing the rate which is to be paid upon it, the Commissioners have at times taken into consideration the uses to

¹ *Tecumseh Celery Co. v. Cin. Jackson & Mackinaw. R'y Co. et al.*, 5 I. C. C. Rep. 668; 4 I. C. R. 318.

² *Truck Farmers' Association of Charleston and Vicinity v. Northeastern R. R. Co. of South Carolina et al.*, 6 I. C. C. Rep. 295.

which a given commodity is to be put. In one case¹ the question was raised as to whether cow peas were to be classed with such commodities as corn and oats, or whether they should go into a class with commercial fertilizers and take the same rates as the latter commodity. The complainants urged that cow peas were used for fertilizing purposes, but the defendants held that they were also used extensively as a feed for cattle and even to some extent as an edible. The Commissioners found the facts to be as stated by the defendants. As a fertilizer it was shown that the cow peas were not only more valuable than other fertilizers, but were capable of fertilizing pound per pound more land than cotton-seed meal and other fertilizers:—

The planter can afford to pay a higher rate on cow peas used in the process of enriching his land than he can afford to pay upon commercial fertilizers; while on the other hand, the carriers would derive inadequate revenue from the carriage of this product if the peas should be treated as complainant insists they should be. There are other facts, however, which still further distinguish cow peas from fertilizers in general use. The vine is used as fodder in stock feeding quite extensively throughout the Southern States, and the pea itself is consumed by many as an edible, and its use as food is quite general. Again, the value of cow peas per hundred pounds is greatly in excess of that of the general fertilizer, a fact which should be considered in fixing rates.

Another case² which illustrates the same point, — that the use to which a commodity is to be put must be considered in determining the rate to be paid upon it, — is that in which the Commissioners decided that “the Scheidel outfit,” an electrical apparatus mainly employed in the production of the X-ray, should be classified with medical and scientific instruments and pay double first-class rates in the Official

¹ *A. G. Swafford v. Atlantic Coast Line R. R. Co. et al.*, 10 I. C. C. Rep. 281.

² *W. Scheidel & Co. v. Chi. & Northwestern R'y Co. et al.*, 11 I. C. C. Rep. 532.

classification, rather than be classified with "electrical appliances not otherwise specified" which were charged single first-class rates only. The Commissioners said, however, that if later there should develop a considerable demand for a similar mechanism for commercial uses, then all such mechanic appliances, including the Scheidel outfit, might be entitled to a lower rating.

The case, however, which best illustrates the principle applicable throughout this entire group is that of *Rice v. Cincinnati, Washington & Baltimore Railroad Co. et al.*¹ It shows that the importance which the Commission is willing to attach to the value of a commodity as a measure of the reasonableness of a railway rate is less in the case of commodities non-character than in the case of those which are in direct competitive in competition with each other.

Complaint was made that the rate on refined petroleum oil was unreasonable as compared to that given on cotton-seed oil, which, tho transported in much the same way and having a higher market value, was nevertheless given a lower rate. The Commission declined to adjust the rates on these two commodities on the basis of their relative values, holding that inasmuch as they were not competitive commodities the discriminating rate given to one could not "appreciably affect the market price of the other," and therefore could not unjustly affect the shipper. The two products were so dissimilar in character and supplied such different demands that a low rate on one could not be of any disadvantage to the shippers of the other.

The Commissioners were willing to admit, however, that since the methods of transporting the two com-

¹ 5 I. C. C. Rep. 193; 3 I. C. R. 941.

modities were much the same, the rate given on one commodity might have "some bearing" on the reasonableness of the rate on the other, especially when their relative values were taken into consideration, and it was seen that the higher priced commodity was receiving the lower rate.

In respect to the methods and cost of transportation, these commodities (cotton-seed oil and turpentine) have a notable resemblance to petroleum products, and the cheapest of them is several times more valuable than illuminating oil. . . . Notwithstanding the comparatively low value of refined petroleum, the amount exacted for its transportation is in some instances 60% greater than the sum accepted for carrying cotton-seed oil between the same stations. It is impossible to reconcile such inconsistent charges. The cotton-seed oil rate, in the cases referred to, is not forced upon the railroad, and must, therefore, be presumed to be remunerative; but if the lower rate for the higher priced article is reasonable to the carrier, how can the higher rate for the lower priced article be reasonable to the shipper?"

Other cases which have come before the Commission might be cited to show how the principle of value of commodity has been made use of to determine the rate on non-competitive articles, but other considerations enter into these cases and their discussion would not aid in the presentation of the argument.

3. *Market Value the Criterion*

The third class of cases in which the value of the commodity transported is accepted as a test of the reasonableness of the railway rate is not a large one nor in itself of great importance. Its importance lies rather in the fact that these cases show that, in judging of the values of the commodities in question, the Commissioners have in mind the market values rather than the intrinsic utilities of the articles.

A manufacturer of patent medicines made objections¹ to the Official Classification employed on eastern railway lines, according to which patent medicines were placed in first class when shipped in less than car load lots and in third class when shipped in car load lots; whereas beer, ale, etc., when shipped in less than car load quantities, were given a third class rating, and in car load lots were placed in fifth class. The complainant asserted that not only were the modes of packing, the methods of handling, and the risks of transportation the same for the patent medicines as for the beer, ale, etc., but that the "intrinsic value" of the patent medicines was no greater than that of the beer, etc. The higher market value of the patent medicines it was said was simply "the result of skill in advertising." The Commissioners, however, declared that:—

The value of an article to the manufacturer is the price it commands and it seems only reasonable that carriers should take into account the market value, a thing generally known and easily ascertained, as one of the considerations in arranging their classifications and fixing the rates that a commodity should bear. It is not seen how the relations that any specific commodity should bear to other commodities for classification purposes can be arrived at in any other practicable way.

Since the evidence in this case showed that a car load of the patent medicines in question had a market value of \$5400, while a car load of beer or ale sold for about \$1800 the Commission decided that the existing differences in classification and rates were justified.

The same attitude was observed in the case of the *Andrews Soap Company v. Pittsburg, Cincinnati & St. Louis Railway Co. et al.*,² where the complainant had

¹ Warner v. N. Y. C. and H. R. R. Co. et al., 4 I. C. C. Rep. 32; 3 I. C. R. 74.

² 4 I. C. C. Rep. 41; 3 I. C. R. 77.

urged that his soap, tho advertised as a toilet soap, was in reality of the same character and utility as laundry soap and therefore entitled to the lower rates given to laundry soap. The Commissioners said:—

A manufacturer's description of an article to induce its purchase by the public also describes it for transportation and carriers may accept his description for purposes of classification and rates.

4. *Social Considerations*

We come finally to a fourth class of cases in which the value of the commodity is accepted as a criterion of the reasonableness of the rates. Here social considerations are cited by the Commissioners as reasons why commodities having a high value should be called upon to pay higher rates than commodities having a low value. Such an idea finds frequent expression in the Commission's decisions, as for example when it is said in discussing the rate on hay:¹ "When the market price of a commodity yields but scant return for labor and expenses of production, the cost of transportation needs to be as moderate as may be consistent with justice to the carriers." The same position with reference to the hay rate was taken in the case of *The National Hay Association v. The Lake Shore & Michigan Southern Railway Company et al.*²

A more explicit enunciation of this doctrine is, however, found in the discussion of the rates on iron and steel products.³ Low rates on these commodities said the Commission are

¹ *Behlmer v. Memphis & Charleston R. R. Co. et al.*, 6 I. C. C. Rep. 267; 4 I. C. R. 570.

² 9 I. C. C. Rep. 364.

³ *Colorado Fuel & Iron Company v. The Southern Pacific Company et al.*, 6 I. C. C. Rep. 488.

largely due to the character of such commodities, the use to which they are put, the demand for them in large quantities throughout the country, their susceptibility of movement at less cost and risk to the carrier than high class and more valuable freight, and other like conditions. It is to the interest of the carriers as well as the public, that their rates be low enough, if not below a remunerative point, to permit the general movement and distribution of these commodities in general demand in larger quantities for construction, building, manufacturing, and other purposes. Reasonable freedom of such movement and distribution stimulates the growth and development of the country and thereby promotes all interests. . . . Rates on steel rails and other low grade freights of the character stated, yielding per ton per mile the average received on all freight would be unjust.

A further indication of the importance which the Commissioners attached to the market values of these commodities in fixing the rates to be paid upon them is shown by the fact that it was later decided ¹ that in cases where the carriers had reduced the rates on iron and steel because of a reduction of the prices of such articles due to commercial depression, they were justified in advancing the rates when the commercial depression was past. The Commissioners were careful to repudiate the idea that freight rates in general might be adjusted on the principle of the sliding scale, but they found something akin to this system in the traffic in iron and steel and did not care to disturb it.

Iron rates seem to be peculiarly susceptible to these commercial influences. The charge for transporting pig iron from southern producers to northern points of consumption has for a long time varied directly with the value of the article transported.

Social considerations have seemed to the members of the Commission to require that the rates on the lower priced grains, corn and oats, should be lower than those on wheat,² and that a considerable reduc-

¹ In the Matter of Proposed Advances in Freight Rates, 9 I. C. C. Rep. 382.

² 4 I. C. C. Rep. 48; 3 I. C. R. 93.

tion in the price of wheat should be followed by a reduction in the rates on that commodity charged by the carrier.¹ Generally speaking, the Commission seems committed to the principle that where the market price of a commodity is low and it is an article in general demand, the interests of the public require that the carrier should be satisfied with small profits from the transportation of this commodity.

The equitable rule doubtless is that rates should bear a fair and reasonable relation to the antecedent average cost of the traffic as delivered to the carrier for transportation and the average market price the freight will command, or, as it is termed, the commercial value of the property.²

It might be thought that the principle of value of commodity could never be applied in connection with the passenger traffic. It is true that in most countries, and to a limited extent also in the United States, the passenger coaches are divided into compartments, having different accommodations and different rates. By so doing it is expected that people of little means may nevertheless travel on the railroads if they are content to accept accommodations inferior to those furnished to the first class passengers. There is no compulsion, however, on the part of millionaires to travel first class and to pay the high rates, if they prefer to take advantage of the low rates offered to those who travel in the second or third class compartments.

In one case,³ however, the Interstate Commerce Commission has upheld certain railroads in their practice of putting immigrants into a special class

¹ 6 I. C. C. Rep. 520.

² *Delaware State Grange v. N. Y., Phila. & Norfolk R. R. Co. et al.*, 4 I. C. C. Rep. 593; 3 I. C. C. R. 554.

³ *Savery v. N. Y. C. and H. R. R. Co. et al.*, 2 I. C. C. Rep. 338.

and giving them lower rates than were accorded either to first or second class passengers, and in their refusal to sell tickets to other persons at the same rates as were given to immigrants even tho these other persons were willing to ride in the immigrant cars.

The reason given by the Commission for sustaining the carriers in this case was that immigrants are

a class of persons readily distinguishable from the general public, and so far constituting a special class that up to that time when they are received upon the cars they are subject to exceptional regulations for reasons, which being accepted as a basis of legislation, must be deemed sufficient.

Altho the Commissioners do not here set forth value of commodity as a reason for granting lower rates to immigrants than to other persons, it seems difficult to justify this discrimination on other grounds. The cost of service would not be less in the case of immigrants than for other persons travelling in immigrant cars. The fact that immigrants constitute "a legally recognized class of persons subject to exceptional regulations" would not of itself justify lower rates than for native-born Americans any more than it would justify higher rates. It is, however, logical to consider immigrants as constituting a class of persons possessing little means, having therefore little ability to pay and thus subject to a lower rate than that given to other passengers. Broad social and governmental considerations therefore serve to justify the lower rates given to these persons of little financial ability.

This review of the more important cases in which the Interstate Commerce Commission has based its decision in large part on considerations involving the value of the commodities, serves to show that while

value of commodity has undoubtedly at times been accepted as a test of the reasonableness of a given rate, the use made of the principle has been much less than one would naturally suppose, in view of the strong assertion by the commission that "the value of the article carried [constitutes] the most important element in determining what shall be paid upon it." There is little, indeed, in the experience of the Interstate Commerce Commission to warrant Professor E. R. Johnson's expectation that as governmental regulation proceeds, rates will more and more be fixed "with reference to the values of the commodities."¹ In those cases in which the Commissioners have referred to the principle of value of the commodity as influential in determining the rate they have never insisted that charges should be *proportional* to the values of the commodities.

In many of the cases decided by the Commission the value of the commodity has been referred to because it indicated in some degree the risk assumed by the carrier. In the most important group of cases which we have considered, the Commission has felt obliged to take into consideration the differences in the values of finished and unfinished goods in order to preserve competition in their production. In still other cases the desire to preserve competition among carriers has led to the consideration of the relative values of the competing commodities. In only a relatively small number of cases has the Commission felt that social and economic considerations were so urgent as to require that commodities entering largely into general consumption and having a low value

¹ Johnson, *American Railway Transportation*, p. 231. Cf. "The Principles of Governmental Regulation of Railways," *Political Science Quarterly*, vol. xv, pp. 46-47.

should be given the benefit of low rates; and even in these cases the argument might be advanced that it was the general demand for the commodities rather than their low values which led the Commissioners to prescribe the low rates.

III. COST OF SERVICE

The proposition that in the business of railway transportation, with its large proportion of fixed to circulating capital, it is impracticable to determine the costs of performing any particular service or of transporting any particular commodity, has been so often demonstrated that we need give it no further consideration. If the theory of cost of service is to be employed in explaining the principle of railway charges, the term costs must, undoubtedly, be used in the sense of joint costs.¹

We have already observed that the original members of the Interstate Commerce Commission held that the cost of service principle was not applicable to railway charges. Their attitude in this matter is well set forth in the following quotation from their decision in one of the earliest cases² which came before them:—

While cost, as has been said, is an element to be taken into account in the fixing of rates and one of the very highest importance, it cannot, for reasons well understood, be made the rate basis, but it must in any case be used with caution and reserve. This is not merely because the word "cost" is made use of in different senses when applied to railroad traffic, it being often used to cover merely the expense of loading, moving, and unloading trains, but also because in whatever sense the word may be used, it is quite im-

¹ Professor Taussig has stated fully this theory of joint cost in its application to railway rates in the *Quarterly Journal of Economics*, vol. v, pp. 438-465. Reprinted in part in Ripley's "Railway Problems," pp. 123-144.

² In re petition of Louisville & Nashville Railroad Company, 1 I. C. C. Rep. 81; 1 I. C. R. 278.

possible to apportion with accuracy the cost of service among the items of the traffic. . . . Any attempt to apportion the cost, therefore, would at the best and under the most favorable circumstances only reach an approximation. This is so well understood the world over that the proposition which from time to time is made in other countries to measure the charge of the carrier by the cost of the carriage solely, have always been abandoned after investigation.

It is well known that traffic managers and others engaged in the business of transportation flatly deny that the cost of service principle can be used as a means of fixing railway rates.¹

In view of this strong agreement between railway officials and the members of the Interstate Commerce Commission as to the impossibility and undesirability of using cost of service as a measure of the reasonableness of a railway rate, it is somewhat surprising to find that in defending rates which have been made the subject of complaint to the Commission, railway officials and railway attorneys have frequently — perhaps most frequently — done so by the use of cost of service arguments. Even more surprising, however, is the fact that the Commissioners have not only lent a willing ear to such arguments and sustained them whenever the evidence seemed to support them, but they have very frequently on their own initiative entered into an investigation of the cost of transportation with a view to rendering a decision on the basis of the facts ascertained by this investigation. The members of the Commission have, of course, never pretended that they could ascertain the exact proportion of the fixed and operating expenses assignable to a given commodity. Such has not been the purpose of their investigations, nor the tenor of the decisions. The attempt has not been made to

¹ Cf. Kirkman, *Railway Rates and Government Control*, pp. 73-75.

apportion the charges, as the Commissioners say, "strictly to the cost." But cost of service has nevertheless been used as a means of determining the reasonableness of rates in four different classes of cases. (1) When a rate higher than the ordinary could be justified on the ground that some special service had been performed or a special obligation incurred by the carrier. (2) Where a rate complained of was judged as to its reasonableness by comparing the *ascertainable* costs of transportation with those incurred in transporting other commodities whose rates were believed to be reasonable. (3) Where comparison was made with costs on other roads or on other parts of the system. (4) Where the costs of shipping commodities in car load lots were compared with those incurred in shipping less than car load quantities. By methods of comparison, therefore, rather than by attempting to ascertain the exact and total costs of transporting a given commodity, the Interstate Commerce Commission has made use of the cost of service principle as applied to railway rates. We shall take up for consideration each of the four classes of cases in turn.

1. *Costs of Rendering Some Special Service*

Under this heading, the first case with which we have to deal is that of *John P. Squire & Co. v. The Michigan Central Railroad Co. et al.*¹ This case should be compared with the Chicago Board of Trade and the Chicago Live Stock Exchange cases which we have already considered and in which, it will be remembered, the Commissioners made value of commodity the controlling principle. In the present case,

¹ 4 I. C. C. Rep. 611; 3 I. C. R. 515.

however, much greater emphasis was placed upon the cost of service.

The complainant in the case was engaged in the business of slaughtering hogs in the vicinity of Boston. For some time, the railroads had granted him a rate of 30 cents per 100 lbs. on live hogs transported from Chicago to Boston. The rate on dressed beef and hog products had been fixed by the Trunk Line Association, after an exhaustive hearing, at 65 cents per 100 lbs. With this adjustment of rates the complainant had been satisfied. Railway competition, however, soon set in, and while the rates on live hogs remained the same as before, those on hog products fell lower and lower, being at times as low as 17 cents per 100 lbs. With this relation of rates existing between the live hogs and their products, the business of the complainant was being ruined, since it was brought out in the hearing of the case that virtually the only difference in the cost of slaughtering hogs in the East and West was the cost of transporting the live animals.

The complainant asked that the rates be based on purely "commercial considerations," wholly independent of the cost of the service. He argued that the railroads should justly make relative rates such that both parties could live, and that the product rate should be higher than the live-hog rate, even if the cost of transporting the two articles were the same, which he claimed was not the case.

The argument resting on the relative values of the two commodities should have exerted an influence, it seems, on the minds of the Commissioners, since value of commodity had been accepted as the controlling principle in the earlier cases which dealt with the same commodities. In the present case the Com-

missioners did not accept this line of reasoning. They admitted that the increased value of the product might legitimately be taken into account in the fixing of the rate, but they declared that to base rates upon the theory advanced by the complainant would mean that the rates on live hogs would have to vary with every change in the market price of the animals in the western markets.

The Commission therefore proceeded to make a lengthy investigation into the relative costs of transporting the two kinds of commodities and reached the following conclusions: —

(1) The product is carried in more expensive cars. . . . The interest on the increased original cost and the greater outlay for repairs are constant expenses. (2) The weight of the refrigerator car, when loaded with the product, including the ice for refrigeration, is about 64,000 pounds, and that of the live-stock car when loaded is 46,000 pounds. If the tariff was based solely upon tonnage, that is, upon the weight of the car and its load when the carrier charges 30 cents per hundred for carrying the live hogs, the charge for carrying the product should be about 42 cents per hundred. (3) The loading and unloading of the animals by the shipper instead of the carrier is a continuing advantage. (4) The rapidity with which the cars used in the live-stock traffic are loaded render them less liable to detention, and they are returned to the traffic sooner than when loaded with the product. (5) The refrigerator cars have to be iced. Five tons of ice and salt per car are furnished in the Chicago-Boston business. This is a constant expense in summer months. (6) The product is more valuable than the live animals.

All of these considerations except the last, it will be noted, have to do with the extra costs incurred by the carriers in transporting the meat products. The costs, it is true, are not accurately determined. Indeed there is much that seems arbitrary in the Commissioners' methods of computing the extra costs due to the methods of handling the meat traffic, by which they arrive at the conclusion that the rates

in force at the time of the hearing of the case, viz. 30 cents per hundred pounds for live animals and 45 cents per hundred for the products, furnish an equitable adjustment of the dispute. The Commissioners of the Trunk Lines had previously given the question of the relative rates for these commodities much thought and had concluded that when the live-hog rate was 30 cents per 100 pounds, the rate on the hog products should be 65 cents. We are interested at present not in the merits of the decision but in the theory by which the Commissioners reached their conclusion; and concerning this their explicit statement leaves us no way in doubt.

We are of the opinion that in the fixing of relative rates upon articles strictly competitive, as these are, the proper relation should be determined from the cost of the service, and if the difference in this respect between two competitive articles can be ascertained, such a rate should be fixed for each as corresponds to the cost of service. This is fair to the carrier and we believe that the manufacturer has a right to demand of the companies that such a relation of rates as to these articles should be maintained.

In the investigation made by the Commission in 1902-1903 into *The Matter of Proposed Advances in Freight Rates*,¹ an inquiry was made into the reasons for a recent advance in the rates on dressed beef from 40 cents to 45 cents per 100 pounds. The carriers claimed that the 45 cent rate was not an advance but a restoration of a rate which excessive competition had made it impossible to maintain in the past. Competitive conditions had now so changed that it was believed that the old rates could be maintained. The Commissioners after investigation concluded that the explanation given by the carriers was satisfactory and that the 45 cent rate was reasonable, —

¹ 9 I. C. C. Rep. 382.

especially in view of the fact that while the rate is high the service is expensive to the carriers. The loading of these cars is of special construction, and heavier than the ordinary car; refrigeration must be provided, which necessitates the hauling of large quantities of ice and salt, an express service is demanded and the car must be returned empty.

The same line of argument was employed in the case of the *Truck Farmers' Association of Charleston and Vicinity v. Northeastern Railroad Co. of South Carolina et al.*¹ The complainants claimed that 6½ cents a quart was exorbitant for transporting strawberries from Charleston, S. C. to Baltimore, Philadelphia, and New York, and that an undue disparity existed between the rates on strawberries and those on potatoes and cabbages shipped in bulk. The carriers defended the rates on berries in view of the unusual costs incurred in their transportation, which they described at length. They claimed, furthermore, that the rates were properly enough made higher on berries than on the potatoes and cabbage because the berries were worth more per pound.

The Commissioners attached little weight to this value of commodity argument made by the defendants, and in their decision placed the emphasis on the high costs of the service. They went carefully over the evidence submitted by the carriers and undertook to calculate the necessary costs of getting the berries into the New York market in good condition. They concluded that the charge of two cents per quart for icing was too high by about one half cent per quart, but otherwise they appeared satisfied with the showing made by the carriers as to the cost of service. They announced, therefore, that a rate of six cents per quart for transporting berries from Charleston to

¹ 6 I. C. C. Rep. 205.

New York was not excessive, and this decision they defended in the following manner:—

The rate per ton-mile under the charge above prescribed of six cents per quart will be very much higher than that demanded by carriers on ordinary freight. Relatively higher rates on strawberries, however, appear to be justified by the exceptional character of the service connected with their transportation. This exceptional service is necessitated by the highly perishable character of the traffic, requiring refrigeration *en route*, rapid transit, specially provided trains, and prompt delivery at destination. There is also involved in this service extra trouble in handling at receiving and delivering points, extra facilities at such points, the "drilling" of cars in a train, reduction of length of trains to secure celerity of movement, partially loaded cars, the return of cars empty, and perhaps other similar incidentals.

In a case¹ analogous to the above the Commission decided that 81 cents per 100 pounds was a reasonable rate for transporting peaches in car load lots from Atlanta to New York. The same considerations creating an expensive cost of service were present in this case as in the one just treated. "In view of these considerations," said the Commissioners, "we cannot say that the established rate is so excessive as to call for condemnation." An interesting feature of this case was the refusal of the Commission to allow the carriers to increase their charges in a progressive rate whenever the value of the car load exceeded \$500. The carriers sought to justify the increase on the ground that the danger of damage to freight was greater in the case of the heavier car loads and that there was no other means of covering these risks, since no charge was made for the excess over the prescribed minimum weights for car loads. It is evident that the higher rates could have been upheld on the value of commodity principle, and the

¹ *Georgia Peach Growers' Association v. The Atlantic Coast Line R. R. Co. et al.*
10 I. C. C. Rep. 255.

failure of the Commission to recognize this fact shows how far its members had departed from their former view that "the value of the article carried [is] the most important element in determining what shall be paid upon it."

In spite of the refusal of the Commissioners to recognize unusual liability to damage as a reason for charging higher rates in the above case, this has not always been the attitude of that body. In the case of the *New Orleans Live Stock Exchange v. Texas & Pacific Railway Company*,¹ the peculiar argument was advanced by the defendant that certain high rates on cattle shipments, which were the subject of complaint, were due to the fact that the carrier was frequently obliged to pay excessive damages awarded to Texas shippers by the Texas courts. The Commissioners were unwilling to admit that "a judgment rendered in the course of judicial procedure is unjust or excessive," but they did recognize that the character of the live-stock traffic was such that large sums for damages might have to be paid by carriers engaged in this traffic, and that this was, "an incident in the transportation of that commodity which may properly be taken into account by the railroad in establishing its tariffs." The higher rates in this given instance were not allowed, however, for the reason that the testimony seemed to show that the large claims for damages were due to the carriers' own negligence; and the Commission held that shippers of cattle ought not to be called upon to pay higher charges for transportation "to make good the negligence of the carrier itself."

Higher rates on lumber shipped from Dalton, Georgia, to points on the Ohio river than were charged

¹ 10 I. C. C. Rep. 327.

from other places near Dalton were upheld by the Commission ¹ because of differences in the cost of service which resulted from "dressing-in-transit" privileges accorded Dalton but not the other places.

The Commissioners said:—

The dressing of the lumber results in a comparatively important waste of raw material, which is by that amount loss of tonnage to the carrier, a duplication of terminal expense, a loss of time and increase of expenses by reasons of delays in the through shipment to destination.

The decision of the Commission in the case of the *Commercial Club of Omaha v. The Chicago & Northwestern Railway Co. et al.*² that the carriers were privileged to charge higher rates on goods sent from Omaha, Nebraska, to points within the State of Iowa than were charged to the same points from Council Bluffs, Iowa (across the Missouri river from Omaha), rested in the main upon the opinion of the majority of the Commissioners that Council Bluffs was entitled to its natural advantages of location for carrying on a trade with Iowa cities. In part, however, the majority of the Commissioners made use of the cost of service argument as a defense of their decision; and cost of service was the sole basis of the argument employed by Commissioner Prouty, who supported the majority in its decision but not in its principal arguments. Even the dissenting Commissioners admitted that the decision of the majority might properly be upheld upon the basis of cost of service arguments were it not for the fact that to all other points than those in Iowa the carriers had established equal rates from those two cities.

¹ *J. K. Farrar et al v. Southern R'y Co, et al.*, 11 I. C. C. Rep. 632.

² I. C. C. Rep. 386.

The cost of service argument rested upon the fact that, in carrying goods from Omaha to Iowa points, the railroads were obliged to make use of an expensive bridge across the Missouri river and to pay the tolls for the use of this bridge exacted by its owners. Messrs. Knapp and Yeomans said, for the majority: —

These shipments to Iowa towns require a greater service from the carriers than is performed for Council Bluffs merchants for they are hauled a greater distance and over an expensive bridge. The charge for this extra service is admitted to be reasonable and those for whom it is performed cannot justly complain because it is not gratuitously rendered. . . . The defendants which constructed the bridge over this river, and the defendants which have leased the right to run their trains across it are *prima facie* entitled to some compensation for their outlay.

Enough cases have been cited to show that the members of the Interstate Commerce Commission have reached the very reasonable conclusion that where the conditions of the traffic are such as to require some special service on the part of the carriers, involving unusual expenditures, the carriers are justified in demanding higher rates to cover these extra costs, and that to this extent at least the cost of service principle is applicable in the case of railway rates.

2. *Comparison with other Commodities*

In this class of cases the Commission has sought to make a study of the comparative costs of transporting different commodities, oftentimes with a view to determining their classification. But since in the Commission's own words, "classification is the foundation of all rate making," it follows that if the classification has been based on costs, these costs inevitably determine the rates to be charged for their transportation.

Possibly the best illustration of this class of cases is the effort made by the Commission to determine the relative rates on oranges and strawberries,¹ shipped from Florida to the New York market. In an earlier case the Commission had decided that a reasonable rate on oranges was \$120 per car. On the basis of this decision the complainants asked for a reduction of the rates on strawberries which, at the time of the hearing of the case, averaged \$361.80 per car.

The Commissioners proceeded to ascertain, what, if any, were the considerations which would justify different rates on strawberries than on oranges and how great these differences should be. As stated by the Commissioners these differences are as follows. It will be noted that all but one of them have to do with cost of service.

(1) The expense of handling berries at junction or terminal points, berries not being handled with trucks, as are oranges. (2) Allowances for hauling the berry cars on the passenger trains on the line of the F. C. & P. railroad. (3) Extra dead weight of refrigerator cars when loaded with berries instead of oranges, owing to the fact that an average berry load is only half an orange load. (4) Extra risk of loss in case of accident arising from negligence of carrier. (5) Less value of the oranges. (6) Less volume of the berry traffic. (7) Only one half the weight of the average car load of oranges makes an average car load of berries. (8) Oranges can go by water or ordinary trains. Berries must go by fast trains. (9) Oranges do not require refrigeration, but refrigeration is indispensable in the berry traffic.

On the basis of these considerations the Commission ordered a reduction in the rates on berries so that they should pay only double first-class rates plus 30 cents a crate. This would make the rate on an average car load \$299.70.

¹ *C. P. Perry v. The Fla. Cent. & Pen. R. R. Co. et al.*, 5 I. C. C. Rep. 97; 3 I. C. R. 740.

In a similar manner the Commissioners discuss the relative rates on beans and tomatoes.¹ The defendant carrier had placed beans in the second class of the Southern Classification and tomatoes in the third class, altho in weight and value the two commodities were much the same. This classification resulted in a rate of 70 cents per 100 pounds on beans shipped from Verona, Miss. to East St. Louis, Ill., while tomatoes were charged only 44 cents for the same distance. The Commission did not order a change in rates or classification, but in the following words declared that the existing rates were unwarranted: "The present difference of almost one half in the rate on beans and tomatoes, when the actual cost of transportation is nearly the same, ought to be remedied."

In several cases which have come before the Commission having to do with the relative rates on corn and corn products, that body has, as we have seen, allowed slightly higher rates on the corn than on its products, mainly owing to the higher value of the latter commodities. In several other instances, however, the differences in the rates on these commodities have been adjusted on the basis of the comparative costs of transportation.

In the case of *H. Bates and H. Bates, Jr. v. The Pennsylvania Railroad Company et al.*,² complaint was made by a firm of Indianapolis millers that owing to a change in classification the carriers were charging a rate of 23 cents per 100 pounds for transporting corn meal from Indianapolis to Chicago, while a rate of only 18½ cents per 100 pounds was charged for raw corn. This relation of rates was said to be proving ruinous to the Indianapolis milling industry. The

¹ *W. R. Rea v. The Mobile and Ohio R. R. Co.*, 7 I. C. C. Rep. 43.

² 3 I. C. C. Rep. 435; 2 I. C. R. 715.

carriers based their defense mainly on the competitive conditions surrounding the traffic, particularly competition by the Great Lakes which affected the rate on corn but not that on corn products.

The Commission did not believe that water competition was very effective in the case of corn sent from Indianapolis, owing to the distance of that city from the Great Lakes. It declared that "no reason founded on cost of service exists for a difference in rates between corn and corn products," and tho it was admitted that the manufactured product was commercially a little more valuable than the corn, other advantages existed in the transportation of the product, so that "on the whole the transportation of each at the same rate was equally valuable to the carrier." The carriers were therefore ordered to cease discriminating between corn and corn products.

The carriers succeeded in obtaining a rehearing of the case,¹ and having discovered that the Commission was inclined to place more weight on differences in the cost of transporting the two commodities than on differences in the commercial values, the defense prepared its brief on the basis of a cost of service argument. Evidence was submitted to show that a difference in the rates on corn and corn products was justified by higher loading and terminal expenses for the corn products than for the corn. It was shown that the difference in the rates which at the time of the former hearing was 4½ cents per 100 pounds had now been reduced to 2½ cents. The rates on corn could not be raised, it was said, because if this were done, it would shut the farmers of the Indianapolis region out of the eastern market, since the rates would then be higher than those from the North and West,

¹ 4 I. C. C. Rep. 281; 3 I. C. R. 390.

where water competition compelled low rates. On the other hand, if the rate on corn products was made as low as that on corn, "the carrier would receive less than a justifiable charge without substantial advantage to the farmers."

On the basis of this showing the Commission decided to vacate its former order which required equal rates on the two commodities. The reasons for this reversal of its decision were stated as follows: —

(1) We think the additional testimony has established the fact that the cost of service to the carrier including terminal expenses properly chargeable as freight charges, is greater on the product than on raw corn. (2) The present rate on corn is down to the lowest point that railroads can possibly reach on corn and leave any profit, and lower than they can go on the product without loss. (3) The downward pressure of competition in the transportation of corn is greater than on the products of corn.

The Commission felt that the reduction by the carriers of the differential between corn and corn products from $4\frac{1}{2}$ to $2\frac{1}{2}$ cents per 100 pounds had remedied in large part the evils complained of. Accordingly its former order was vacated and no further order was issued.

In another case ¹ which had to do with the difference in rates on corn and corn meal shipped from Kansas points to points in Texas, the Commissioners said: —

We find that the difference in the cost of service in the transportation of corn and corn meal does not exceed three cents per 100 pounds, and that there are no other conditions surrounding the transportation of these two commodities like differences in value, greater liability to injury, etc., which justify a difference in rate of more than three cents.

The last case ² in this group which we shall cite is of much interest, for the decision of the Commission

¹ *Board of Railroad Commissioners v. The Atchison, Topeka & Santa Fe R'y Co.*, 8 I. C. C. Rep. 304.

² *Cattle Raisers' Association of Texas v. Missouri, Kansas & Texas R'y Co. et al.*, 11 I. C. C. Rep. 296.

rests upon a careful balancing of the costs of service, cited by the defense as a reason for high rates, against certain other costs cited by the complainants or discovered as a result of the investigation which would have tended to make low rates on the traffic in question natural and desirable. The case deals with the matter of an advance in rates on live cattle shipped from Texas points to northern ranges and also to the principal cattle markets, Chicago, St. Louis, and Kansas City. The advances in rates had extended over a period of several years; and by 1903, when the complaint was filed, the rates were "higher than any rate ever in effect since rates were filed with the Commission."

The carriers claimed that the rates formerly in force were the result of severe competition and furnished no standard of reasonableness. They defended the existing rates by an elaborate showing as to the costs of service of the cattle traffic as compared to the costs of transporting other commodities. Since the costs cited by them appear in the Commission's decision, presently to be quoted, it will not be necessary to give them at this point.. One thing in which both the carriers and the Commission seemed to agree was that the case should be decided on the basis of cost of service. Even the usual practical objection to this method of determining the rate disappears in the light of the Commission's statement that "*it is possible to determine with reasonable accuracy the cost of transporting a train of this live stock between any two points.*"¹

The Commission, however, did discuss other considerations than cost of service which might justify the increase of rates. It discovered that neither the

¹ *Italics mine.*

carriers' need for revenue nor any increase in the value of the commodity transported could legitimately serve as an excuse for the advances. On the contrary the ton-mile revenue from the cattle traffic was greater and the cost of movement no larger than in the case of other freight, while the cost of producing cattle in Texas was greater than at the time the first advances in rates were made. The new rates were not the result of competition but were the result of concerted action on the part of the roads acting through the Southwestern Tariff Committee.

Returning then to the cost of service arguments put forth by the defendants, the Commissioners said: —

These traffic officials all base their opinion upon the assumption that the cost of handling this cattle traffic is much greater than the average cost of handling all traffic. The reasons which they give for this assumption do not, as we have seen, bear examination. They all say that the cattle traffic is more expensive because cattle trains are shorter than other trains, but the testimony in this record shows that they are in fact longer. It is said that the loading of a cattle car is less than the average loading of other freight cars, and, therefore, that the paying revenue of the train in which they are transported is less, but, it appears that while the loading of the individual car is lighter, the revenue freight in the cattle train is as much or more than in the average dead freight train. Other disabilities are pointed out. Some of these are capable of being expressed in dollars and cents as the cost of maintaining pens and shutes, the cost of bedding and disinfecting cars, the cost of loading, the extra hazard peculiar to this species of traffic, etc. These aggregate from one to one and one half cents per hundred pounds. In addition there are certain minor matters like the use of a longer cabooses, the return of the attendants, the stopping to feed and water which are not susceptible of any estimate upon this record, but of which the aggregate cannot be large. There is the more important fact that this traffic must be given an express service, but we have seen that the greater expense of providing a fast service depends largely upon the fact that the train loading of revenue freight is lighter, whereas here the loading is at least equal to the average. There is a very substantial disadvantage growing out of the fact that a large percentage of cattle

cars must be returned empty; but here again the difference is less than one would suppose from a casual consideration of the subject. The empty movement in case of all traffic is necessarily large, being some thirty per cent as applied to the entire car mileage of most of the defendants as against forty or forty-five per cent in case of stock cars. This, however, is a substantial disability against this traffic.

If we turn to the rates themselves we find that the average revenue per ton-mile which these stock rates yield is greater in all cases and much greater in some cases than the average rate per ton-mile. We also find that while the average rate per ton-mile in case of all these defendants decreased materially from 1892 to 1903 these stock rates, even before the advances of 1903, had in most cases increased. . . . The cost of operation has increased in some respects, but this has been more than offset by the introduction of improved methods and especially by the large increase in the volume of the traffic.

The Commission accordingly reached the conclusion that the advances in rates made during 1903 were unjust and unreasonable and that the existing rates were therefore "unjust and unreasonable by the amount of said advances." The carriers having made their defense strictly on the plea that the costs of moving the live stock were higher than for ordinary freight, the Commissioners followed this line of argument and declared that "the average cost of moving live stock is not greater than the average cost of moving all commodities." To show, however, that they fully agreed with the carriers that the decision should be reached on the basis of cost of service arguments, they say: "In determining a reasonable rate the cost of performing the service, as has been just observed, is one element in that rate, and cost of movement is an important item in arriving at the entire cost of service."

There are many other cases in which the Interstate Commerce Commission has made use of the method of comparative costs to enable it to judge of the rea-

sonableness of a given rate. Usually, however, other arguments are relied upon in part, and the cost of service principle is therefore presented in less distinct fashion than in the preceding cases.

3. *Comparison with Rates Elsewhere*

A second method of comparison employed by the Commission in certain instances has been to judge of the reasonableness of a given rate by comparing the costs of performing the service with the costs incurred on other roads or on other parts of the same road where the rates were believed to be reasonable. There are not many cases of this sort and they need not long detain us.

Complaint was made in one case¹ that the rate for transporting cotton from Meridian, Mississippi, to New Orleans was too high. The investigation showed that if more than 20 cents per 100 pounds, or about a dollar a bale, were charged, it would be more profitable for shippers to send their cotton to the eastern market by another route. At the same time, it was apparent that such a low rate would be an unprofitable one to the carrier, since, even with the rates then in force, the carrier was earning little more than operating expenses. The Commissioners declared that while the fact that a rate was unremunerative must not be overlooked, this would not justify rates grossly excessive. They decided that the costs of sending cotton from Meridian to New Orleans could not be more than the costs of sending it from Shreveport, Louisiana, to New Orleans, where the rate was \$1.50 per bale. The carrier was accordingly ordered to

¹ *New Orleans Cotton Exchange v. Cincinnati, New Orleans & Texas Pacific R'y Co. et al.*, 2 I. C. C. Rep. 375; 2 I. C. R. 289.

reduce the Meridian-New Orleans rate to \$1.50 per bale.

In another case¹ the defendant carriers had been shipping wheat to market over a route 478 miles in length, having many heavy grades and curves, and had charged 32½ cents per 100 pounds for such shipments. There was, however, a shorter route, only 311 miles in length, having only a few ascending grades and these exceedingly light. Wheat was not sent by this route, altho it would have been much cheaper thus to transport it. The Commissioners held that the rate of 32½ cents might be presumed to be reasonably remunerative over the longer and more expensive route and must therefore be excessive over the less expensive and more direct route. "The complainants," it was said, "have a just and reasonable right to have the products of their farms carried to market by the shortest and least expensive routes at a reasonable through rate."

In the important case of *George J. Kindel v. the Boston & Albany Railroad et al.*² complaint was made that rates on cotton piece goods in less than car load lots shipped from Boston, New York, and other Eastern points, were charged \$2.24 per 100 pounds to Denver, while only \$1.50 per 100 pounds was charged to San Francisco, 1400 to 1600 miles beyond Denver. Car load lots were charged only \$1.00 per 100 pounds to San Francisco but a special car load rate was refused to Denver.

The Commissioners concluded from their investigation that the low rates to San Francisco were permissible under the circumstances, in order to meet

¹ *Newland et al. v. The Northern Pacific R. R. Co. et al.*, 6 L. C. C. Rep. 131; 4 L. C. R. 474.

² 11 L. C. C. Rep. 495.

water competition, *provided* that these rates were not so low as to cause the transportation of such merchandise at a loss and thus compel other traffic to make up this loss. If, however, the existing rates to San Francisco were sufficient to cover costs, then the high rates to Denver which resulted from a combination of several local rates must be regarded as unreasonable. The Commissioners said: —

The actual cost of carriage is ignored, as an element in rate making in this method of charging and collecting the local rates for through shipments. The local rates are fixed by the carriers to cover all terminal expenses on the shorter hauls, charges and delays to the initial and terminal points, and it is not reasonable on a joint through haul, where these terminal delays and expenses are spared at the intermediate points, that such economy in transportation should not be shared by the shipper who must bear the burden of the long 2000 mile haul, and it is unreasonable and unjust on the part of the carriers that the long, uninterrupted through route, even if no through rate is agreed to, should bear the full local rates.

On the supposition then that the \$1.50 rate to San Francisco covered the costs of transportation, the Commissioners claimed that the same rate would prove sufficient to Denver. They remarked: —

It would seem that the \$1.50 must pay a reasonable profit to the carriers and it is our judgment that the rates in question should not exceed that. Surely a rate which pays expenses for a 3400 mile haul will yield reasonable profits for a haul not much above half that distance when the service actually rendered is far the cheaper and easier half of the total haul.

4. *Car load and Less than Car load Shipments*

The rule that commodities shipped in car load lots usually take lower rates per 100 pounds than when shipped in less than car load quantities itself rests upon the principle of cost of service. This fact has been frequently emphasized by the Interstate Com-

merce Commission, as in the case of *The Harvard Company v. The Pennsylvania Company et al.*¹ where it is said that the mere fact that one article is shipped in greater quantities than another when there is no considerable difference between them in "bulk, weight, and value," and "in expense of handling and hauling," constitutes no reason for a difference in their rates and classification.

Mere quantity not measured by a recognized unit of quantity adapted to the carriage, and lessening the expense of handling and carriage, cannot be allowed to affect rates in the transportation of property. . . . The lower rate in proportion upon car loads of freight, treating a car load as a unit, than upon the same article in less than a car load does not come within any such principle as this, but is founded altogether on different considerations.

In the following cases the Commissioners make it clear that these "different considerations" pertain to the cost of transportation. Another Standard Oil case² furnishes the first illustration.

Complaint was made, among other things, that the carrier was charging exceedingly high rates for barrels of oil when shipped in less than car load lots, and these rates were shown to be in many instances more than double the rates on barrels sent in car load quantities. After hearing the arguments on both sides, the Commissioners decided to sustain the existing difference in rates. They reached this conclusion with great reluctance because the rates on less than car load lots were so high that they seemed to be "in their nature prohibitory." The Commissioners were careful to say that such great differences in the rates would not be permissible in the case of other kinds of freight and were only allowed in the oil traffic because

¹ 4 I. C. C. Rep. 212; 3 I. C. R. 257.

² *W. C. Schofield et al. v. Lake Shore & Michigan Southern R'y Co.*, 2 I. C. C. Rep. 90; 2 I. C. R. 67.

“the cost of service is very considerably less in the case of shipments in car load lots than in the less than car load quantities.” The reasons for this great difference in costs were found to be as follows: (1) The shipment by car load goes direct to destination. It is loaded by the shipper and unloaded by the consignee. On the other hand, freight when sent in less than car loads has to be taken out in parcels, and the expense of loading and unloading is performed by the company. (2) In the case of car load lots only one bill of lading is necessary and only one entry is made upon the way-bill. When less than car load lots are taken a separate receipt or bill of lading has to be given to each shipper and a separate entry for each item is made upon the way-bill. (3) The time occupied in transportation is less in the case of car load lots, for smaller shipments must be sent by local freight trains stopping at every station for which there is a shipment. In this way the time occupied in transporting the smaller lots is from two to three times as long as that required for car load lots. (4) In the case of car load lots there is only one collection of freight charges while for the smaller shipments there are as many collections as there are different parcels. (5) In the case of less than car load lots there inevitably remains vacant space in the cars for which the carrier receives nothing. (6) The risks from loss of fire are greater in the case of oil sent in small lots, for these small shipments are unloaded in the station house, while car load shipments are unloaded at a distant point.

It would be interesting, did space permit, to discuss at length the case of *Thurber et al. v. The New York Central & Hudson River Railroad et al.*,¹ one of the

¹ 3 I. C. C. Rep. 473; 2 I. C. R. 742.

most perplexing cases which have come before the Commission for its decision. The complaint concerned the rates given on groceries shipped in less than car load quantities from New York to retailers in the central and western states. Much lower rates were given on car load shipments, and it was alleged that this discriminated against eastern distributors. Emphasis was placed by the complainants on social considerations, especially the fact that the normal mode of shipment of such commodities was in small packages. They did not deny that some difference might be made in the rates on car load and less than car load quantities, but held that such difference "should be so small as not to consume the commercial profit on the goods." The carriers on the other hand based their defense mainly on the lower cost of handling car load shipments.

The Commissioners denied that it was the business of carriers so to fix their rates as to preserve a commercial profit to manufacturers or jobbers, but they also declared that cost of service was not the controlling principle in this case. The controlling principle was the interest of the general public. The public was more interested in miscellaneous shipments of groceries than in solid car load shipments. The carriers should accordingly adjust their rates so as to conform to the existing business of the country. At the same time the Commissioners recognized that the car load was a practicable unit of quantity and that if an article moved in sufficient volume it was reasonable to give it a car load classification. The difference between car load and less than car load rates, they said, is "based on the well known fact of a difference in the cost of service by the carrier."

The Commissioners accordingly decided that the

carriers were not justified in charging more for car load shipments when a full car load was sent from many consignors to many consignees, than when sent from one consignor to one consignee, but "in the case of smaller shipments to many consignees at many destinations, there is such material difference in the cost of service, in the earnings of cars, and in car detentions, as to justify a higher charge."

In spite therefore, of the Commissioners' statement that cost of service was not the controlling element in the case, it would appear that, in the final analysis, cost of service determined the Commission's decision with reference to a difference in the rates on car load and less than car load quantities.

In the case of *The Buckeye Buggy Company v. The C. C. C. & St. L. Railway et al.*¹ the Commissioners held that inasmuch as the practice of giving car load rates on buggies had been followed by the carriers and held legitimate because the cost of handling this business was less, the same rule must be applied whether the consignor or consignee was the owner.

The defendants may clearly require that the goods shall be located at one time and place, that but a single bill of lading shall be issued, that the shipment shall be from one consignor to one consignee, but when these goods are so loaded, when by the terms of the sale they become the property of the consignee upon delivery to the carrier, the carrier has no right to inquire whether the consignee obtained his title from one or from several owners. If they accord a car load rating in case the consignor is the owner, they should extend the same privilege when the consignee is the owner.

In the last case² which we shall cite to illustrate the application of the cost of service principle, the Commission decided that if \$100 was a reasonable

¹ 9 I. C. C. Rep. 620.

² C. M. Barrow v. Yasoo & Mississippi Valley R. R. Co, et al., 10 I. C. C. Rep. 333.

rate for "transporting twenty-five horses, which is about an average car load, together with an attendant, \$99 is too much for transporting four horses with no attendant."

To the average man the unreasonableness of the latter charge would appear to be because the four horses were worth less than twenty-five, and it would seem that this consideration should have appealed to a body of men who had declared "the value of the article carried" to be "the most important element in determining what shall be paid upon it." The Commissioners did not however advance this argument in the present case but explained their decision on the basis of a difference in the cost of service. "The car may perhaps weigh the same in either case, but the total weight of the full car load is considerably more, the actual cost of hauling is more, the expense of unloading and reloading is more." It was accordingly suggested that the defendant so modify its rates as to charge no more than \$72 in the aggregate for transporting four horses, if the rate of \$100 for a full car load remained in force.

Our review of the cases in which differences in the costs of service have been cited by members of the Commission as reasons for differences in rates shows that the Commissioners, as well as the traffic officials of the various railroads, have made much greater use of the cost of service principle than their preliminary utterances would lead us to expect.

It has seldom happened, of course, that an effort has been made to apportion the charges strictly in proportion to the costs of rendering a specific service. It is doubtful, however, whether any class of business men to-day undertake to do this. Their method is

rather that followed by the Commissioners in the cases which we have considered. A merchant or manufacturer by comparing the receipts from one department or one line of goods with the outlay for this department and then comparing these net returns with those in other departments, arrives at certain conclusions as to the relative profits from the several lines of business. The fixed expenses chargeable to the business as a whole he assigns in a more or less arbitrary fashion according to labor costs, or to the cost of the material or, even more loosely still, according to floor space, it may be, or according to the amount of sales or the number of employees, or whatever in his business seems to be the best unit of measurement. By carefully comparing the rates of growth of the various departments with the growth of his profits, he is able year by year to correct his former standards of measurement.

In the same way railway managers sometimes apportion their fixed expenses according to the ton-mileage of their different kinds of freight. In applying the comparative method of determining costs and of fixing charges in accordance thereto it would seem that the Commissioners and the railway officials have been merely pursuing the methods generally known and accepted by most careful business men, and the cost of service principle doubtless is capable of much the same application in the railway business as it is elsewhere, — unless it be in academic treatises on economics.

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PROPOSALS FOR STRENGTHENING THE NATIONAL BANKING SYSTEM. III.

A CENTRAL BANK OF LIMITED SCOPE

SUMMARY

A central bank with large lending power will not fit into our system, 71. — And it is not necessary, 74. — Its primary functions: (a) The settlement of clearing house balances, 77. — (b) To ensure the use by the other banks of their resources in emergencies, 79. — (c) Handling the domestic exchanges, 81. — The clearing of country checks, 84. — Method of selecting the directorate, 86. — Prohibition of collateral loans, 87. — The bank acceptance an unnecessary and hazardous device, 88. — Capital of the central bank, 89. — Note issue, 90. — Retirement of the gold certificate and the U. S. note, 91. — Statement of account of the proposed bank at the opening of business, 92.

I

THE present paper will be concerned entirely with the elucidation of a plan for a central bank; but as the effectiveness of the plan would largely depend upon the adoption of the proposals which were brought forward in the two preceding articles in this series, these proposals may be summarized here by way of introduction.¹ The establishment of true savings departments by the national banks with segregated deposits payable at notice, which might be invested in mortgages, was advocated as a means of enabling the banks to employ more of their funds at home, thus reducing somewhat the strain upon the city banks in emergencies. Two classes of banks, local and reserve agent banks, were proposed to take the place of the present three classes. Both classes of

¹ See the issues of this Journal for February and August 1910.

banks might be established anywhere, but those choosing to become reserve agent banks would be required to have a minimum capital of \$500,000 and would be obliged to carry a cash reserve of 25 per cent, a cash reserve of 10 per cent being required from local banks. In order to render more certain the use of reserves in emergencies it was suggested that the banks should be allowed to go below reserve requirements upon the payment of a fine sufficiently onerous to ensure the maintenance of reserves in normal times, but not so high as to prevent their use when really needed. An asset currency limited in amount to 40 per cent of the capital and surplus of the banks was proposed, to take the place of the bond-secured notes. This separation of the circulating medium from government bonds would enable the government to avoid the accumulation of a large surplus in the treasury in the future. Finally, it was pointed out that elasticity cannot be secured while the present practice of paying interest on bankers' deposits continues. The payment of interest upon minimum weekly or fortnightly balances during a period of six months was suggested as a way out of this unsatisfactory condition of affairs.

The adoption of these proposals would diminish materially in emergencies the strain upon the reserve-holding banks of the cities and would also increase somewhat and make more available the money holdings of the banks generally. But while the power to meet the demand for loans and also that for cash from depositors would be increased, it must be admitted that no absolute certainty is secured against that senseless scramble between the banks to strengthen themselves which more than anything else has caused the breakdown of our credit machinery on every

occasion of severe strain in the past. Bankers must have confidence in the means at their disposal, and the public must have unquestioned trust not only in the ultimate solvency of the banks but also in the ability of the banks to maintain payments at all times; otherwise, no system, however strong it may be, can endure the strain incidental to trade reaction without danger of financial panic.

Now, altho one may feel convinced that the means which have been suggested would be ample to enable the banks to handle emergencies effectively, it becomes evident that something more is needed when we find that the officers of our large reserve-holding city banks are of the opinion that, even with a very considerable increase in the ratio of their cash holdings to deposit liabilities, it would be impossible to respond to the demands which would be made upon them by country banks in a crisis of the severity of that of 1907. On the other hand, there is apparently a widespread and growing belief among bankers that difficulties which have proved overwhelming in the past can be met and even removed through the establishment of some kind of central bank or central authority in our banking system. It is urged, and with much reason, that the results achieved in all countries which have made trial of institutions of this kind would give it an initial prestige which would be a source of great strength. It is also pointed out that we should then have a banking influence exercised with a deep sense of responsibility, and above all that we should have a reserve of cash and of lending power which could certainly be turned to in emergencies.

The promise of improvement through the establishment of a central bank would seem to be bright if it is so devised as to fit into our existing complex

banking machinery. This possibility does not, however, lessen the importance of proposals designed to strengthen the existing banks such as those with which the preceding articles have been concerned. On the contrary their importance is rather enhanced if the attainment of the desired results is to be secured through the device of a central bank. The danger that other banks will rely wholly upon it for assistance in emergencies is one which must be squarely faced. The restraining power which a central institution can exercise in periods of business activity over twenty thousand or more independent local banks is certainly slight, far less than that over the comparatively small number of banks in European countries in which branch banking prevails. Influenced by the natural desire for large profits, our banks have shown no evidence of any appreciable willingness to maintain themselves in a stronger condition than was required by law. It is to be feared that the mere existence of a central bank will tend to foster the growth of unsound conditions by relieving the other banks of all sense of responsibility. Moreover, should the entire burden in emergencies be imposed upon the central bank, its power to make loans and to extend credit must be of colossal magnitude if it is to be able to prevent the complete breakdown of our credit machinery. On the other hand, regarded simply as one feature of a plan for strengthening our banking system, a central bank with restricted functions and power can be devised which gives far more certain promise of improvement.

Writing in this Journal for May, 1909, I pointed out at some length that the most serious and, perhaps, insurmountable obstacle to the successful working of a central bank in this country is found in the employ-

ment in normal times of even a part of the vast lending power which was an essential feature of all the plans for such an institution which had been brought forward. Nor has this difficulty been overcome in any of the proposals which have subsequently appeared. Further reflection, however, has led me to the conclusion that a central bank is feasible for this country; but only upon two conditions. In the first place, the adoption of measures designed to strengthen the other banks is necessary in order to diminish the strain upon the central bank and consequently the need of granting it the colossal lending power which will otherwise be indispensable. In the second place, it must be generally recognized that it is not the primary function of a central bank to strengthen our system by means of the advances which it may make to other banks. Through a central bank the machinery can be provided which will prevent the scramble between the banks to strengthen themselves in emergencies and which will also greatly diminish the withdrawals of cash by individual depositors except from banks whose solvency is in question. If this can be accomplished it would never be necessary for a central bank to make large advances to the other banks. Its lending function would be distinctly secondary and its power to extend credit could be limited to such comparatively small proportions that the difficulty of handling its loan account in normal times would not be of serious moment. But to most of those who are favorably inclined towards the central bank proposal much of its attractiveness is found in the improvements in our credit arrangements which are expected from its lending operations. Moreover, the view that a central bank with extensive lending power cannot be made to fit into our system has been con-

troverted by high authority¹ and the conclusion that this view is without real foundation has gained wide acceptance. For these reasons it seems advisable to give some further consideration to the matter before introducing the particular proposal which is the main concern of this article.

Foreign example, tho helpful, must be followed with extreme caution on account of some fundamental peculiarities in our banking organization and practice. The power of banks to extend credit in the form of deposits is restricted in all countries having a central bank, with the single exception of England, on account of the limited use of checks. Consequently when a given amount of accommodation is secured from the central bank the other banks are not able to make very much more than an equivalent increase in their own loans. The effect of advances made by the Bank of England is far more considerable. Upon the notes of the Bank as till money and upon balances at the Bank as reserves rests the vast deposit credit structure of the other banks. Except when the proceeds of loans are being used to meet foreign obligations or payments to the government, advances by the Bank of England serve to increase, tho indirectly, the foundation upon which the other banks extend credit in the form of deposits to several times their amount.² The lending operations of the Bank do not, however, result in dangerous credit expansion because its power to extend loans is not great, and even that limited power is exercised with great caution. It is unable to extend credit in the form of notes, since its note is

¹ See Paul M. Warburg's *A United Reserve Bank of the United States*, pp. 33-42.

² The process is indirect because the other banks do not rediscount at the Bank of England. It is the withdrawal of money lent to bill brokers, who in turn are obliged to borrow from the Bank, which serves to increase bankers' balances at the central institution.

virtually a gold certificate; and tho its deposit credits have the same effect upon the lending power of the other banks, the general economic and financial position of the London money market seldom permits of their rapid increase. A large amount of foreign money is regularly employed there, and any considerable increase in the loans of the Bank would at once depress rates and induce the withdrawal of foreign lenders.

In the United States the expansive effect upon the volume of credit of the advances made by a central bank, whether in the form of notes or deposits, would be similar in kind to that noted in the case of the Bank of England. But the difficulties to be met would be far more unmanageable. It is agreed upon all hands that there is no likelihood of securing favorable action upon a plan for a central bank if it is to compete in any substantial way with existing banks. Its loans are to be made to the other banks either in the form of notes, which, unlike those of the Bank of England, are to be credit instruments; or in the form of deposits on its books. Both its notes and deposits would be considered (and necessarily so if the bank is to be able to handle emergencies) as reserves by the other banks. Upon these reserves they would without much doubt build up deposit credits to the extent permitted by law or, in the absence of legal limitation, to such limits as might be deemed safe by the officers of the individual banks.

It is contended, however, that the danger of excessive credit expansion resulting from the operations of a central bank would be slight because the Bank would rediscount only paper of the very highest quality, and that it would be overcome entirely by means of a sliding scale of discount. But the character of the security which will be acceptable will not appreciably

affect the situation one way or the other. Practically all banks have some paper which would meet the most exacting of tests. The root of the difficulty is found in the use which will be made of the additional lending power thus secured by the other banks. While in some instances this power might be used to make further loans of the same high character, there is quite as great a possibility of its employment in underwriting syndicates or in collateral loans to customers the proceeds of which will be used for speculative purposes.

The effectiveness of a sliding rate of discount in preventing undue credit expansion is also far from certain. Where, as in England, foreign financial dealings are large relatively to those of purely domestic origin, the course of the foreign exchanges is a delicate barometer of the credit position, and it is a comparatively easy matter for the officers of central banks to adjust their rates to meet changing circumstances. In the United States the credit furnished by the banks is almost entirely utilized for domestic purposes. Excessive credit expansion is but remotely reflected in the market for foreign exchange. It would, therefore, be unusually difficult for the central bank to adjust its rates so as to promote business activity when that would be of general advantage and to exercise restraint when that becomes necessary.

But there is a far more serious obstacle to successful results from a sliding scale of discount. Partly on account of the differences in the average quality of loans but mainly on account of the absence of branch banking, there is a wide difference in lending rates between various sections of the country. If the central bank is to lend everywhere at a rate which would just make it of advantage for the banks of the

eastern money centers to resort to it for discounts, it would be overwhelmed with requests for loans from banks in those sections of the country in which rates are high and an excessive proportion of its funds would be thus absorbed. It might, indeed, lend at different rates in the various sections. But it is extremely unlikely that public opinion would tolerate such differences, especially if the bank were granted a monopoly of issue and held large government deposits. The demand that lending resources be distributed evenly has not occasioned serious difficulty to central banks in other countries,¹ but in the United States there is certain to be such a demand, because owing to the absence of branch banking it would be one of an entirely reasonable nature.

Credit is but imperfectly fluid in a system of numerous independent local banks. Loanable funds flow readily from country banks and those of small cities to the large cities and especially to New York. But with us, unlike the countries with branch banking, the movement goes no further. Our money centers are reservoirs for the collection of funds which cannot be employed either temporarily or permanently at home, but they are unsatisfactory distributing agents. Even tho the demand for loans in its neighborhood is large, the local bank can get little from the money centers beyond what it has deposited or employed there. In England it makes little difference where or to whom the Bank of England makes its advances. Credit may be likened to a reservoir the general level of which is raised or lowered by the loans of the central bank. In this country there are as many reservoirs as there are banks or at least locali-

¹ The agrarian demand for agricultural credits has been the nearest approach in Continental countries.

ties. Loans made by a central bank in Boston or Baltimore or even in New York would not enable banks in Seattle or Galveston to lend more freely. In these circumstances a central bank would be obliged to lend in each locality and enormous pressure would be brought to bear to remove any obstacle, such as a discriminating rate of discount, even tho it might be based upon the soundest of banking principles. And in carrying through contraction the management of a central bank would be faced by an even more perplexing problem. It would be necessary to consider the situation in each locality and to apply pressure only where credit had been expanded beyond safe limits and in proportion to the extent of the expansion. Can we expect local opinion to coincide generally with that of the management of a central bank? Often, it is to be feared, aggrieved localities would feel that they were being treated less liberally in the case of expansion and more severely in the case of contraction than neighboring and competing communities.

II

All these difficulties, it will be observed, have a common origin. They will disappear if it can be shown that a central bank can perform its essential functions without that enormous lending power which will bring upon it an irresistible demand for accommodation from other banks in periods of active business. It would then be recognized at the outset that it is not to be primarily a lending institution and that its powers can be so limited as to shield it from unreasonable requirements.

There is a consensus of opinion that the withdrawal and hoarding of cash in emergencies by both individ-

uals and banks has been due not so much to doubt of ultimate solvency as to fear that the banks would temporarily suspend. If this fear can be removed, emergency requirements for cash and the consequent sudden contraction of loans to which the banks have resorted in the past, would no longer be of serious moment. The mere existence of a central bank firmly established in public confidence would largely do away with those temporarily large cash requirements which have proved too heavy a burden for banks. Certainly it would not have been necessary for it to pay out any such quantity of money as would have been needed by existing banks in order to allay distrust in any one of our past crises.

But the diminution in cash withdrawals through the establishment of a central bank is not limited to the general effect of the greater confidence in our banking system which it might create. Through its means more direct influences can be exerted which will so reduce emergency withdrawals that they will become a negligible factor in the working of our credit machinery. This can be accomplished with advantage to the other banks and without involving any loss of liberty in the management of their affairs. The means are very simple: it is only necessary to make the central bank the organ for settlements of clearing house balances in the important cities and also for handling payments and transfers of money between different sections of the country. In other words, its primary function would be that of a clearing house for the entire country with which the other banks would become so closely related in normal times that it would be entirely unlikely that the connection would be severed in emergencies.

The importance attached to this function is the

fundamental novelty in the present central bank proposal. Its significance must therefore receive somewhat detailed exposition.

The ordinary clearing house affords a familiar indication of what may be accomplished through a central bank in economizing the use of money by diminishing the aggregate withdrawals from the banks and by making them more regular in amount from day to day. A clearing house has the immediately practical function of simplifying the daily settlements between the banks of a locality. But its operation has another and even more important result: that of reducing very largely the amount of money required in the conduct of banking, at least in normal times. If, for example, each bank in New York made daily cash settlements with all the other banks of the city singly, it is obvious that a very much larger part of the money holdings of the banks would be in constant use. It might even happen that all the money held by a bank would be paid out in meeting unfavorable balances with some of the banks, tho it might be more than replaced in the course of the day by money received from the remaining banks against which it had favorable balances. Clearly, then, if clearing balances were settled by means of transfers on the books of a central bank instead of with cash there would be a still further economy in its use. This is the London practice; and it reduces materially the amount of coin or notes which would otherwise be withdrawn day by day from the Bank of England. The aggregate balances of the other banks at the Bank of England may remain stationary while wide fluctuations may be of daily occurrence in that of any particular bank. Fluctuating withdrawals of cash are avoided which, even tho temporary, would

make it necessary for the Bank to hold a larger reserve than is now required.

Economizing the use of cash is not, however, the most important result which would follow from the settlement of clearing house balances through a central bank. It would stand ready to make advances when necessary to banks whose reserves had been depleted. The possibility of securing such accommodation would render entirely unnecessary the resort to the issue of clearing house loan certificates in emergencies. Advances by the central bank would be far more effective because they could be made without the delay and inevitable publicity which destroys much of the usefulness of that instrument as an emergency device. Moreover, the working at cross purposes among the banks, which in the absence of provision for the equalization of reserves has always continued after the issue of loan certificates, would be entirely prevented.¹ The central bank would be in position to refuse accommodation to banks seeking to strengthen themselves unnecessarily when well able to meet their obligations with their own cash resources.

It is to be assumed that the central bank, if it is to perform such functions in any adequate fashion, would establish branches in all the important commercial and financial cities of the country. Let it be assumed also that settlement of clearing house balances would generally be made by means of transfers on its books. Then the following results of the first importance would follow. The Bank would be enabled to handle much business by means of deposit

¹ This subject is discussed in the first of the present series of articles, in the February number of this Journal, pp. 234-240. It is much more fully treated in the writer's *History of Crises under the National Banking System* recently published by the National Monetary Commission. See especially references under Clearing House Loan Certificates and Equalization of Reserves in the index.

credits on its books which would otherwise involve the issue of notes or the withdrawal of coin from its reserves. The pressure on the Bank in emergencies would be materially diminished, because it would be in position to insist upon the use of the cash resources of the other banks. This would be a very great gain, especially if means of strengthening the other banks, such as were urged in the two preceding articles, should be adopted. Instead of relieving the other banks of their responsibilities, the central bank, it will be seen, would exert a powerful influence in securing the regular performance of their duties. Finally, the vital cause of weakness which has invariably manifested itself on every occasion of crisis would largely disappear. At such times our banking system has been subjected to intolerable strain because of the wholesale withdrawal by country banks and those of the smaller cities of balances deposited in the banks of the large cities and especially in the banks of New York. The unreasoning fear has prompted this action to some extent, the main cause has been the well-grounded belief that the city banks would discontinue currency shipments and temporarily suspend payments. Confidence that payments will be maintained by city banks will certainly do much to reduce withdrawals within limits set by the actual needs of the country banks, and those needs will in turn be greatly lessened if individual depositors acquire confidence in the capacity of the banking system as a whole to meet occasions of severe strain.

There remains for consideration still another means for diminishing and regularizing the movements of cash between banks by means of facilities which can be provided by a central bank. At present many banks are separated by enormous distances from

their reserve agents. When a bank thus situated finds it necessary to increase its cash holdings, either to meet regular requirements, such as those for crop-moving purposes, or in order to be on the safe side in emergencies, it will naturally call for a larger shipment of currency from city banks than there is any great likelihood that it will be obliged to use. The available statistics tho incomplete indicate that very much more money is withdrawn from city banks every autumn than is actually used by the country banks for crop-moving purposes.

This defect in our system can be remedied and at the same time other important advantages gained if the central bank establishes a system for handling the domestic exchanges between all the places in which it has branches, by means of which all payments between banks can be met by transfers on its books. The Reichsbank has perfected a system of this sort which has proved of great advantage, making it possible to make payments throughout the country speedily and at a minimum of expense.¹ The service is open both to banks and to individuals, the only condition being the maintenance of a balance at the Bank the amount of which is determined by the volume of transfers in each particular instance. Whether in case such a system is adopted in this country it should be available for individuals need not be definitely decided at the outset. Until the machinery is perfected it would seem the wiser course to restrict its use to the banks alone. The economy in the use of cash which might be secured in this way is evident. Suppose a bank in Utah were to draw upon its balance

¹ For full details regarding the *Giro-verkehr* system of the Reichsbank see the volume entitled *Miscellaneous Articles on German Banking*, pp. 171-213, published by the National Monetary Commission.

in some one of the New York banks. The latter would simply transfer the amount through the central bank to the branch of the central bank in the vicinity of the Utah correspondent. The latter, having its funds in its immediate neighborhood, would only draw them out gradually from day to day as the need arose. Moreover, the central bank would not have to ship funds from New York; even if, like the Bank of England, it were only able to issue a note which is merely a gold certificate, it would still be able to keep a supply of its notes at all of its branches, and from this supply it could pay out anywhere an amount of notes equal to its cash holdings, which would doubtless be largely concentrated in New York. Finally, it may be noted that this system would make it impossible for the reserve-holding city banks to refuse to meet the demands of their banking depositors for funds. The country bank would be able to send a draft on its reserve agent for collection through the central bank and this draft would go through the clearing house in the city where the reserve agent was situated.

Apart from its importance in emergencies a universal system of transfers through a central bank would have important advantages in normal times. The present situation regarding the domestic exchanges is far from satisfactory either to the business community or to the banks. Collections and payments are subject to delay and involve heavy expense, burdensome to most banks tho to some extent shifted upon their customers. Practically the entire expense of the domestic exchanges could be saved. The actual cost to the central bank would be far less than that inevitable under the present system, or lack of system; and such expenses as it would incur would be met by the profits arising from the balances which the other

banks would be obliged to maintain in order to make use of the service. The maintenance of these balances need not be an added expense to the banks, even tho no interest upon them could be allowed. Such balances might properly be included as a part of the required cash reserves of the banks, not merely a part of their reserves which may be deposited with other banks. It seems neither necessary nor desirable to overturn our present system of deposited reserves by taking away a large portion of the funds with which the present reserve-holding banks conduct their business and transferring them to a central bank. Such a great change would make the central bank an institution of unwieldy size and would deprive country banks of all return upon that part of their reserve; and it might lead to a wasteful retention of all their required reserve in the form of cash in their own vaults. The plan proposed would give the central bank a moderate volume of bankers' deposits, leaving the present arrangement unchanged aside from the modifications suggested in the first article of this series.

One further means of improvement remains for consideration. It is closely related to the proposal which has just been discussed, but does not involve any action on the part of a central bank. In a country so large as the United States it would be difficult and perhaps undesirable to establish a system for collection of all checks through a single institution. Tho experience might indicate that such an arrangement was feasible, it would greatly simplify matters at the outset to provide through a central bank only the machinery needed to make transfers between the localities in which it might open branches, leaving to the various clearing houses the task of handling

settlements in their immediate neighborhood. Already a few clearing houses (among which that of Boston is the most important) have in successful operation arrangements for handling checks from surrounding country banks. The cost of collection has been materially reduced; to such an extent that banks can afford to take country checks at par. The average time for collection has also been greatly reduced, with the result, among other advantages, of preventing the vicious practice resorted to by some weak banks of living largely upon the proceeds of collections for which they remit only after much delay. This method of handling country checks seems to have had something to do with the maintenance in New England of regular settlements between banks even during the crisis of 1907. Where such a mechanism is provided, ensuring the steady and automatic presentation and payment of checks and drafts, there is much less likelihood that a bank will resort to delays and evasions as a means of strengthening itself in emergencies than under a regime which allows even in normal times more or less habitual delay.¹

With our existing banks strengthened in ways such as were suggested in the two preceding articles, and with a central bank in position to insist upon the full use of their resources in handling emergencies, there would be little need of direct assistance from that institution. It should have sufficient lending power to give confidence in the stability of our banking system, but not the enormous strength which would be required if it were to be the entire support of our credit structure in periods of financial strain. In short, according to this plan the management of

¹ On methods of clearing country checks see, in the National Monetary Commission Publications, J. G. Cannon, *Clearing Houses*, pp. 58-64, 259-276.

the central bank may be likened to the general staff of an army, while the bank itself in the exercise of its powers will be analogous to a reserve rather than an attacking force.

III

It does not come within the scope of this paper to present a detailed plan of organization for a central bank, still less to set forth the legislative restrictions upon its powers or the policy which should be followed by its management. These are matters which may be left for settlement if its primary functions are agreed to be of the kind which has been outlined. Attention will be directed in conclusion to a few matters of special importance or difficulty which should be kept in view in working out the details of a plan for a central bank.

Foreign experience shows very clearly that successful results have been achieved by central banks, differing widely one from another in the details of their organization. In the attainment of the objects in view from the establishment of such an institution, therefore, the determination of the most suitable form of organization for this country, while an occasion for constructive thought of a high order, is, after all, a matter of secondary importance. One thing, however, is essential. Much of the opposition to a central bank of any kind is based upon the fear that it might be controlled and used for selfish purposes by the powerful financial groups which control the large reserve-holding New York banks. This is not a very serious danger under any circumstances, because a central bank is made very nearly immune from such attempts by the publicity which attends its operations and even more by the constant public interest

in its condition and policy. As a positive safeguard, however, the form of organization can without difficulty be made such that the fears of the most distrustful should be allayed. The management might be made entirely independent of the shareholders, as is the case with all central banks except the Bank of England. A part of the directorate might well be appointed by the federal government, tho perhaps not the majority; and certainly not the entire board as is the practice in most countries, the representatives of the shareholders having only an advisory function. The national banks, organized into districts for the purpose, might well be empowered to choose some or even all of the directorate, quite regardless of whether the capital is to be subscribed by them or not. Finally, if the capital is to be furnished by individuals, the shareholders might have the power to choose some number, less than a majority, of the board. All three of these parties in interest might share in determining the composition of the management of the bank. By any one of the means suggested the likelihood of the bank being controlled for selfish purposes, even for a short time, would be practically nil and for any prolonged period an absolute impossibility.

There remains for consideration another safeguard which would in large measure render valueless a successful attempt at gaining control. In Europe, central banks employ their funds mainly in discounts or rediscounts of trade bills, tho they also make (invariably at a higher rate) a moderate amount of advances upon collateral security. In this country, it would probably be found advisable to prohibit entirely the making of collateral loans. Such loans have altogether too much vogue at present, our bankers

greatly exaggerating their liquidity, at least in emergencies. Moreover, in the development of the trade and industry of the country they are of far less importance than the commercial bill. To a very considerable extent they merely enable weak holders to retain a large mass of securities which, if held by persons able to pay for them outright, would do much to strengthen our financial position. Of course, the restriction of the business of the central bank to dealings in commercial paper would not prevent resort to it by banks seeking additional funds to be used in collateral loans, since all banks are certain to have some paper of the commercial variety. But it would simplify matters to a very considerable extent for the management, and would also vastly diminish the utility of the bank to any particular financial group and consequently the temptation to seek a controlling voice in its management.

In recent discussion of the advantages which may be derived from a central bank much has been said of the desirability of domesticating the bank acceptance in this country.¹ It is urged that in its absence the loans of the banks are not and cannot become truly liquid and also that through its use a loan market, as wide as the country, may be developed, so that all borrowers would secure the same rate upon a given grade of security. The proposal is attractive. But it is open to serious objections; and fortunately much of the advantage promised can be secured by other means involving far less danger.

If an acceptance will serve the requirements of a borrower he is far more likely to be accommodated by

¹ National Monetary Commission Publications; *The Discount Market of Europe*, by Paul M. Warburg; and *Bank Acceptances*, by L. M. Jacobs.

a bank than if it were necessary to grant him a loan. In both instances the bank incurs an obligation. In the case of the acceptance the obligation is entirely contingent upon the inability of the borrower to meet the bill when it matures. In the case of the loan the bank is subject to the same possibility of loss from the failure of the borrower to meet his obligations; but it has also the immediate obligation to supply him with the proceeds of the loan. The use of the bank acceptance involves a danger of excessive credit expansion which is most serious under our system of twenty thousand or more banks. Foreign example affords no indication whatever of what the results might be. In England, with its small number of banks of large average size, this business has been until recently carefully avoided, having been conducted entirely by a small number of accepting houses. On the Continent the acceptance has been in more general use, having been developed at first by private bankers, a very conservative class. Tho from the beginning of their history adopted by incorporated banks also, it must be remembered that the number of such institutions has never been large and that they have been generally of considerable size.

The bank acceptance would seem to be indispensable in connection with the financing of foreign trade; but for purely domestic trade its utility is relatively slight and its use seems to be generally declining. In our foreign trade it might readily be developed by foreign exchange banks, and this may be expected when rates for loans in this country decline to European levels so that it will be profitable to employ our capital for that purpose.

In purely domestic dealings the advantages promised from the use of the bank acceptance can be secured

by other means involving far less risk of excessive credit expansion. Even at present, many borrowers throughout the country secure through note brokers the lowest rates current on commercial loans. These rates, as well as those on commercial loans secured directly from the banks, are unreasonably high judged by foreign standards, inasmuch as they are higher than rates for collateral loans. If it may be assumed that banking profits are not excessive at present, it follows that all that can be expected through the adoption of any change in our credit machinery is a reversal of the relationship between these two classes of loans.¹ This will be accomplished through the central bank if its operations are confined to commercial paper. Indeed, it is the practice of lending at lower rates on trade bills than on collateral loans by the European central banks, rather than the bank acceptance, that gives the former its relatively low rate. Further, it is the preferential treatment of commercial paper which gives it its liquid character in foreign countries. The same policy followed by a central bank here will make the trade bill, whatever its form, a more liquid asset for the banks than the collateral loan and will consequently secure for it a more satisfactory rate.

Most of the plans for a central bank have agreed in assigning to it a capital of something like \$100,000,000. But this amount would seem to be excessive for

¹ European bankers might employ temporarily idle funds in our commercial bill market if the bank acceptance were adopted, but the amount of such funds would probably not be large enough to affect appreciably the rate for loans. The wide fluctuations in foreign exchange rates between markets separated by wide distances would be an obstacle. Moreover, it would be extremely hazardous to become dependent upon large amounts of so fluctuating a resource. It is not a serious matter in London because in addition to its own domestic and foreign trade the foreign trade of other countries is also largely financed there.

a bank of the kind here suggested. A capital of \$50,000,000 would be considerably greater than that of any other central bank except that of the Bank of England, whose capital is entirely tied up in the government debt. Dividends upon the shares of the bank should be limited either to a fixed maximum or by turning over to the government a progressively increasing proportion of profits. Even with profits limited in this way, however, a large capital invites the danger of an unnecessary extension of the operations of the bank in order to earn a moderate return to shareholders.

Experience shows very conclusively that it is unwise to hamper a central bank with restrictions upon the extent to which it may extend its credits either in the form of notes or deposits. Presumably a central bank in this country would find it desirable to maintain in normal times a specie reserve of at least 50 per cent against its demand liabilities, but it should feel no hesitation in, and certainly should not be prevented by law from, going as far below that proportion as might be necessary in handling emergencies. But legislative provisions, which without limiting the possible amount would impede somewhat the issue of its notes, might serve the useful purpose of shielding the bank from unreasonable demands for accommodation. No advantage is to be gained through an increase in the amount of paper substitutes for coin so long as the present undesirably large increase in the gold supply of the world continues. Both monetary and banking requirements would seem to be best served by granting the bank the right, free from taxation, to issue an amount of notes equal to its gold holdings, while all additional issues upon which there would be no definite limit might be sub-

ject to a tax of at least 5 per cent. The issue of taxable notes need not be regarded as in any way an emergency measure. The tax would restrain the management somewhat but its primary purpose would be to shelter the Bank from the criticism of over-sanguine citizens unable to perceive in periods of active business the wisdom of a refusal to extend credit to the extreme limits of safety.

In addition to the funds subscribed by its shareholders the Bank would also secure funds deposited by the other banks to enable them to make use of its exchange and clearing service, and also the funds constituting the working balance of the United States Treasury. It might, too, secure a still further accession of funds, and at the same time relieve the government of a portion of its monetary burdens, if the issue of gold certificates were discontinued and the present certificates redeemed. On account of the preference of the people for paper money much of the gold thus paid out would certainly be taken to the central bank to be exchanged for its notes. This gold would largely augment the general banking reserve of the Bank since it would not be held as a special deposit against the notes.¹ At the same time the \$346,000,000 of greenbacks might also be exchanged for the notes of the Bank, the \$150,000,000 gold reserve being turned into its general reserve. As a result of these arrangements two kinds of money now in general use would disappear from circulation, the gold certificate and the United States note, and would be replaced by the notes of the central bank. The government would

¹ Much of the strength of the Bank of France is to be attributed to this preference for paper money. The stock of money in circulation has increased in France with the growth of population and business, and on account of the increase in the world's supply of gold. This gold, instead of going directly into circulation, has been largely taken to the Bank of France to be exchanged for bank notes.

cease to be responsible for any kind of paper except the silver certificates. The amount of these, however, is far less than is always required for monetary purposes outside the banks and they no longer present a serious monetary problem. They might, indeed, be taken over by the bank in exchange for its notes. The reserve of the bank would then be composed in part of silver; but in this respect it would not be unlike some very successful central banks, notably those of France and Germany. At the outset, however, it might well prove the wiser policy not to weaken the prestige of the bank in this way. By reserving for the silver certificate the one-dollar and two-dollar denominations, and by restricting the volume of bank notes of the next two denominations, sufficient use would be provided for the existing volume of silver certificates, the position of which would then be somewhat analogous to that of subsidiary coin.

The outcome of these monetary changes will be made somewhat more evident by the construction of a statement of the condition of the Bank just before opening its doors for business. Most of its liabilities can be stated with some certainty: viz. capital \$50,000,000; U. S. notes \$346,000,000; U. S. Treasury account (taking its present condition as a basis) \$160,000,000,¹ and, finally, the deposits of bankers for clearing and exchange purposes, which may be estimated at \$75,000,000. The assets of the Bank can be estimated less exactly, because of the impossibility of knowing the proportion of the different kinds of money now in circulation which would be turned into the Bank. Subscription to its capital

¹ I have not included in this statement the item of \$36,000,000 of U. S. deposits now held by the national banks. Presumably, much of this amount would be transferred to the central bank, tho perhaps not at the outset.

might reasonably be made payable in gold or gold certificates. Upon assuming responsibility for U. S. notes, the Bank would receive the \$150,000,000 gold reserve. The remaining \$196,000,000 might perhaps be taken care of by assigning a government debt to the Bank which, as in the case of the Bank of England, would be a book debt not subject to sale. This obligation need not involve any interest charge on the government. Even if interest were paid, it would be a matter of no special importance, in view of the limitation of dividend to be paid to shareholders. The Treasury balance would give the Bank \$95,000,000 in gold and \$65,000,000 in other kinds of money made up as follows: \$5,000,000 in U. S. notes, about \$30,000,000 in bank notes, and a similar amount in silver and subsidiary coin. Assuming that the deposits of the Bank would be made up of \$50,000,000 in gold and \$25,000,000 in U. S. notes; and cancelling the \$30,000,000 of U. S. notes, the statement of condition of the Bank would be as follows: —

<i>Liabilities</i>		<i>Resources</i>	
Capital	\$50,000,000	Gov't debt	\$196,000,000
U.S. notes	316,000,000	Gold	325,000,000
U.S. Treas. account	160,000,000	Silver	30,000,000
Due to other banks.	75,000,000	Notes of other banks	30,000,000
	<u>\$601,000,000</u>		<u>\$601,000,000</u>

The Bank would have a gold reserve of more than 62 per cent of its demand liabilities. Its power to issue notes, however, before reaching the taxable limit would be slight, only \$29,000,000. But that would be an advantage from the point of view which has been emphasized in this article. In normal times the rediscounts made by the Bank would probably involve an increase mainly in its deposit liabilities

rather than in the volume of its notes in circulation. Restricted to dealings with other banks there is some doubt whether sufficient business would be regularly secured to enable the Bank to meet expenses and provide a moderate dividend on its shares.¹ Much might be said in favor of a government guaranty of 3 per cent on the \$50,000,000 of capital. It would be a small price to pay the Bank for taking over U. S. notes and for handling the receipts and disbursements of the government.

The extent and the rapidity with which the gold holdings of the Bank would be increased through the exchange of gold for its notes cannot be even roughly estimated. It would seem probable that many banks would prefer to hold gold or gold certificates in their reserves rather than the notes of the Bank. On the other hand, gold certificates received in payments to it would be cancelled and either gold or notes paid out according to the preference of customers. Moreover, a considerable portion of future additions to the gold supply would probably be exchanged for notes on account of the preference of the people for a paper circulating medium. This exchange of gold for notes would not increase the power of the Bank to issue untaxed notes but would greatly strengthen its reserve and consequently its ability to extend its operations and to meet any strain upon its resources.

This growth would, in part, be paralleled by that in the number and volume of business of the other banks. Even if ultimately the Bank should attract to itself the means for extending the scope of its operations, that need not be a ground for apprehension.

¹ Idle funds might be employed profitably in the purchase and holding until maturity of foreign commercial bills of exchange. There could be no opposition by the other banks on the ground of competition.

At the outset it would be most important that the Bank should not be overburdened with responsibilities and that the other banks should not rely upon it as the sole support of the credit structure. But when experience had shown that the other banks continued to maintain themselves in a condition of reasonable strength, and that the central bank could secure the use of their resources in emergencies, it might then with safety engage in operations which would have been extremely hazardous at the beginning of its activities.

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SOCIAL PRODUCTIVITY VERSUS PRIVATE ACQUISITION

SUMMARY

The genealogy of certain current doctrines traced back (1) to the distinction between productive and unproductive labor, 97. — The origins of this distinction in Mercantilism and Physiocracy, 99. — Mill's interpretation, 101. — The bearing of the materialistic and mercantilistic notion of production upon the notion of productive instruments and upon the distinction between land and capital, 102. — This distinction as reinforced by the argument from origins, 103. — This distinction subjected to the tests of competitive production for the market, 104. — Its support derived from English juristic thought and institutions, 104. — (2) The Unseen Hand, Natural Law, and *Laissez-faire* as separate sources of the current optimism, of the current misconceptions of productivity, and of current confusions between social and competitive analysis, 106. — These summarized, 109. — The genealogy of the Productivity Theory of Distribution, productivity being presented as social service, 110. — The concept of capital restated in harmony with the competitive, individualistic, pecuniary organization of business, 111. — Capital characterized not by technological tests or by materiality, 111. — Nor by the materiality of its product, 112. — Nor by social service, 113. — But by pecuniary return, — as, likewise, with the productivity of labor, 114. — Other dangers of error and other actual errors through the confusion of the social and the competitive points of view, 115. — The necessary reformulations of doctrine, 116. — General summary of the argument, 117. — The Productivity Theory of Distribution, as commonly held, old in all essentials, 118.

ATTEMPT will be made in the following pages to trace the derivation of certain central doctrines in current economic theory — doctrines which furnish the dominant issues in later theoretical controversies, doctrines, also, which in the opinion of the present writer converge to make up one stupendous error, or better perhaps, a great group or congeries of concurring errors. But, in any case, an adequate under-

standing of current issues will be appreciably forwarded by an examination of the derivation of the particular doctrines under consideration.

These subordinate and concurring doctrines are three in number: The first of the triad — first in importance if not in time — is the doctrine of unproductive labor and of unproductive consumption.

Barring the socialists, who still upon occasion exploit this view with propagandist fervor, it may be said that there is to-day no one to deny the productivity of the preacher or singer or actor or teacher or man servant or maid servant. If the artisan who constructs a violin is productive, so, also, is the artist who plays it. If to grow wheat or to grind it is economic production, so is baking it. If we may regard as productive the industry which furnishes the beef, so may we also the industry that cooks it; we eat the broiling on our steak as truly as we eat the steak. If a stock car is productive in transporting beeves over wide intervals of space, so likewise must be the waiter who brings the steak from the kitchen or passes it at the table. And precisely as we pay for the transportation of commodities, we pay to have ourselves transported. If a freight car is capital, so is a Pullman. One colorist with his brush fixes his fancies upon canvas; another color worker by the magic of his words paints pictures on the tablets of the mind; the fact that we pay for either shows either to be value rendering. To create matter is in truth given to none of us; we only arrange and combine and distribute. Nor, indeed, is the very existence of matter better than a hypothesis.

All this is clear enough in these latter days, tho not yet fully accepted in all its implications. But at an earlier time the case had a different seeming.

Nor even now are we entirely quit of our confusions; ever and anon the older doctrine echoes faintly into our time.

But for the point of view of that earlier day and for the purposes of its theoretical needs, the distinction in question had some basis of meaning.

Cameralistic doctrine was the economics of kingship and sovereignty. The inquiry regarded solely the prince's welfare in the administration of his private estate. The various flocks upon the plains — two-legged as well as four-legged — were to be husbanded and, in the times and manners proper to them respectively, to be shorn, the ends proposed being simply the maximum possible revenue and the highest level of dynastic prosperity. The economist was a specialist in stewardship.

Economics is always pragmatic in spirit and in method. Thus with passing time the centre of interest inevitably shifted. With this change of interest there took place in some measure a recasting and a reformulating of economic doctrine. National interests were progressively displacing dynastic interests. Attention shifted from imperial wars and bickerings, and from kings and their trumpeting, to questions of the growth of peoples and of states, and to the extension of their power in territory, in wealth, and in influence. The point of view of mercantilism, however, remained consistently national as distinguished from individualistic and personal, and competitively national as distinguished from social or cosmopolitan. How, indeed, shall any people grow in economic power as against its neighboring enemies? By piling up wealth, by goodly accumulations of munitions and moneys and credits

against the time of conflict. And how shall any man or nation become wealthy, except by selling more than is bought, by keeping consumption under production? And how so well extend your personal economic dominion over your neighbor and over your neighbor's possessions — his desirable daughter included — as by getting him into debt to you? Or how so well render yourself strong, and at the same time your competitor nation weak, as by getting it into debt to you, or better yet, by getting its purchasing power into your own control, through cornering its medium of exchange? And how accomplish all or any of these things unless by selling your victim neighbor or nation more than you buy back? Thus conceived, with the nationalistic emphasis, the whole question became not primarily one of income, or of aggregate satisfactions and of total consumption, but of accumulation, and especially of growth in wealth under the form of foreign credits or other ready international purchasing power.

Proceeding from substantially the same point of view, the physiocratic school seemed to itself to have discovered a method better yet, — accumulation truly, but accumulation rather of population than of wealth. Artisans consumed as much wealth as they produced; the social cost of their product was as great as their product. Manufacturers were regarded as, in Dr. Franklin's phrase, "subsistence metamorphosed." Agricultural laborers also consumed all that they produced or, at all events, all that they received as wages, and seemingly must always command so small a wage as to make this a permanent fact. Whatever the product of labor and land together might be, the excess in produce over the laborers' wage and necessary subsistence must go to the

landowner as the equivalent and expression of the productiveness of the land. So with agricultural, also, as with artisan labor, the social cost canceled the social product; only the land was productive of *net product*. But even so, there was this difference between artisan labor and agricultural labor, that artisan labor did not increase the total population maintainable in the country, gave forth no subsistence product, no life material, while the product of agriculture may be regarded as population, expressed in the form of its raw material. And it seemed clear that national supremacy was rather a question of population than of accrued wealth.

It followed also that, inasmuch as the laborer received only enough to live upon anyway, there was small use, and some harm, in trying to tax him. The only man who, having a product net, a surplus, could pay was the landlord, the rent-gatherer. If the laborers paid taxes, it must be at the expense of their number. It followed from all this, then, that the program fundamental to national greatness was to foster agriculture as a life-maintainer, the sole source of increasing population, and to tax the land.

Adam Smith, coming into the national point of view as an inheritance from earlier thought, set himself deliberately to the investigation of the causes, and to the formulation of the rules, making for the increase of the opulence of nations, and found that while manufactures were productive, they were not so *in the same sense as agriculture*, while labor as mere service was not productive at all. The shadow of physiocratic reasoning was still over Adam Smith.

Not having arrived fully and consistently at the individual point of view in economic analysis, John Stuart Mill followed substantially in the footsteps of

Adam Smith. Unproductive consumption is consumption that does not furnish maintenance for productive labor. Productive labor is, in turn, that labor which affords an addition to the aggregate accumulated wealth possessions of society. Thereby he arrived at the distinction between material and immaterial. But this distinction between material and immaterial rested not at all upon considerations of utility, of importance for consumption in the aspect of service to human needs, nor finally and fundamentally upon some test of concrete reality, or of tangibility, or of materiality in any philosophical sense, but solely upon the aspect of permanency. For in a general way, that which is material and tangible is enduring; at any rate, that which is not material, which has no substantiality, is evanescent; in coming to be it ceases to be. Thus only material things can add to national wealth. And that some forms of material wealth are themselves very temporary in their existence, e. g. ice cream, leaves the line between the material and the immaterial none the less an actual line and, at the same time, a line which coincides practically with the line between the things that add to national accumulated riches and the things that do not add.

All of which was excellent for its purpose, and need have occasioned no perplexity or controversy, if only Mill had not fallen into the error of following his predecessors in their bad choice of terms; for the line which he was really seeking was not that between the productive and the non-productive, or between the material and the immaterial, or between the tangible and the intangible, but merely the line between the accumulatable and the non-accumulatable. Interpreting his terms *productive* and *non-productive*

in this sense, no difficulty is presented, excepting, perhaps, with regard to the significance of the distinction, as seen from the point of view of a more modern analysis and of its theoretical needs.¹

But, either by strict logic or by analogy, other things followed. If material facts only were wealth and material wealth alone were economic product, then only material goods were capital. The economic process was conceived as strictly an industrial and a technical process. The factors of production were material factors making for tangible, material, concrete results amenable to measurement by weight and tale. Thus the different factors of production fell into classes determined by their technical relations to a strictly mechanical process conceived on large and general lines. The mechanical, concrete, industrial equipment at the disposal of human energy — also mechanically regarded — was divided into two clearly defined and comprehensive classes corresponding to the large and general (and essentially vague) distinction between agricultural and non-agricultural production, or — more accurately — to the distinction between the extractive and the non-extractive industries. Hence, in part, the distinction between land and capital.

But for the purposes of any workable classification this distinction will not serve. Not the extractive industries alone but all industries employ land, precisely as all industries make, under present conditions, use of non-land equipment. And even as a distinc-

¹ See the writer's *Value and Distribution*; page 122, note: And it should here be said that, not only in phrase, but still more in doctrine, the present article borrows liberally from the same source. The main purpose, in truth, of the present writing has been to present, as forcibly as may be possible in short compass, a few of the theoretical positions there argued for at great length and weariness.

tion of degree it will not hold. Some of the extractive industries, mining for example, are pronouncedly, even prevailingly, capital-using in their technique; and even the most simple and primitive of extractive employments make appreciable use of non-land instruments.

From the social point of view, also, *tho somewhat violating the technological test*, the distinction between land and capital was reinforced by obvious differences of origin: the genetic point of view. Some part of the material productive equipment comes by natural bounty, a gift of providence, a racial heritage rather than a racial achievement. The produced facts, — products of labor set aside for further use in production, — fitted passably well into the capital category already constructed upon technological distinctions.

It is, however, clear that, for any purposes of a competitive economy, this distinction on lines of origin leads nowhere when attempt is made to apply it. From among all the changes of all the ages, who can assume to tell what environmental changes have been due to environmental processes as against human agencies? What part, for instance, of the fertility or the infertility of the land has been due to its treatment at the hands of man, to his fertilizings, his exhaustings, and his denudings; what part to fostering or wasting winds, to corals, to birds, to bugs, to worms, to microbes? What share of the value of the house traces back to the timber values of the natural forest, and what part to industrial processes? Even with the case of machinery, the typical form of capital, human wisdom would fall far short of distributing the final value between the original ore value as

against the labor value, the coal value, and the timber value. Nor, for any one of these various shares, would it be possible to determine how far land rents, as expressed in warehouse and transportation charges, have counted in the case. And finally, if any one could succeed in this allotment of origin-credits, either for the land or for the warehouse, is it to be supposed that, as shares in the total hire of the machine, these remunerations would forthwith, either in the collective or in the competitive reckoning, take on a new relation to the cost of the product or to its value?

But in a larger social, historical, and philosophical view the distinction remained still valid—only that it was not valid for any purposes of competitive entrepreneur activity or for any problems of market value and price or for the analysis of the competitive distributive process. It was, however, unfortunately assumed, and still is commonly assumed, that what is true for social purposes holds for the competitive analysis.

But perhaps the most important corroboration for the distinction between land and capital, and possibly the origin of the distinction, is to be sought in the jural background of English thought. The civil law of England and in a large degree the economic, political, and social organizations trace back to feudalism, a system in which land ownership was the controlling and directing fact for almost all purposes, political and economic, theoretical and practical. The line of cleavage between real property and personal property runs deep through all English jurisprudence.

It would, then, be a most interesting investigation, if only one had the necessary learning, to trace out

the manner and degree of connection between the legal distinction of realty from personalty and the economic distinction of land from capital. That the parallelism is more than merely fortuitous may be taken as beyond doubt.

It only remains, then, to inquire whether the common-law distinction between real property and personal property recommends itself as in any way essential or necessary, or can point to other than a purely historical explanation or warrant: Roman law and the derivative systems suffice for testimony to the contrary.

If the foregoing considerations are to the point, adequate explanation is presented for the classical habit of confining the field of economics to a study of the production, distribution, and consumption of wealth, wealth being taken to mean tangible material goods; for the restriction of production to the bringing about of material results; for the construction of categories of material factors based upon material items of equipment; and for the distribution of this store of equipment into material non-land equipment on the one hand as over against land equipment on the other hand.

That we, the economists of these latter days, have inherited richly and gratefully from our forebears is equally to our credit and to our good fortune. Nevertheless the best of the story is yet to tell. We have still to analyze the spiritual setting of these doctrines — their soul and heart and aspiration — before we can either estimate all that they meant to their exponents or approve of all that they have signified to us as legatees. Only so can we measure the degree of the unfealty of a few of us to the faiths of the fathers.

We need, that is to say, to note how far a genial optimism due to a reverent faith and a reverent faith derived from a genial optimism converge to reinforce and to extend and to interpret the more strictly intellectual aspects of the classical doctrine. We need to know the inspiration and the spiritual furnishing of the classical view. Filially and uncritically, therefore — as becomes the heirs of an estate — a few words must be said of the Guiding of the Unseen Hand, of Natural Law, and of *Laissez Faire*.

There are other bases of optimism, doubtless, but the readiest is religious faith. Seen in the large and in ultimate bearings, things must be going well with the world; else what can God be about? It is given to none of us to thwart the will of the Creator of all of us. Whatever we do we must perforce be working out the great program, treading the wine from His presses, milling out the foreordained grist. It can not be but that we are playing the part for which we have been assigned to the ends of the eternal process. However great then may be our ill of purpose, there can be nothing ill in the results. Whether or not there be, somewhere or ever, any other good than the good will, it is certain that there can be nothing ill but the ill will. Whatever wrong we may purpose, and however great the guilt of our bad intent, and however grievous the merited punishment, there can never anywhere be any guilt of accomplishment. This is a world where even all ill is good, since this is a world ruled by infinite goodness: "God's in his heaven."

This much granted, — and it is not much to grant for the truly religious man or for the truly religious age, — it forthwith becomes incredible that the best interests of any of us can antagonize the interests of

the others, if only it be possible to the individual to appreciate things in their ultimate meanings and their long effects. Somehow each of us meets the faith in him that, could he see things farsightedly and clearly, self-love and fellow-love would find themselves reconciled in the moral code as it daily enacts itself in the human conscience. The right of the neighbor can hardly be wrong to us. The claims of sympathy and the demands of duty not only express our obligations to our fellow beings, but sum up in highest and truest sense our own well being. Somehow the right thing must be the best thing for each of us. It cannot do our neighbor wrong; it must be best for him as well as for us. It follows, then (as, for example, Bastiat argued) that all exchange is a mutual transfer of services. All trade is good; good from the point of view of the traders immediately concerned, and good for all the rest. International trade especially must be good for both nations. Hence further corroboration of the brave and noble faith that all individual interests, rightly seen, must harmonize; any clash must be the merest seeming, or somehow real interests have been misconceived. And even when these misconceivings are most common and most extreme, the Unseen Hand will always — or almost always, or commonly, or at all events sometimes — marvelously and providentially set things right. It was odd, no doubt, in a world like that of Adam Smith's construction, that there should turn out to be any such thing as unproductive labor; and particularly was it odd that traders and middlemen should so multiply, being mostly parasitic. But at any rate both valets and traders could be trusted to become gradually fewer — a laggardly and leisurely fulfilment of the divine will, but none the less a ful-

filment. In general, surely, private gain must accord with public welfare. Consumption must take place by right of a preceding production. Private gain must trace back to social contribution. Capital must be such by furtherance of social product. Private income connotes a socially earned income. Distribution is solely and exclusively a division of a joint product among the coöperating productive factors. So runs the Great Plan.

Tenuous and unsubstantial rather than solidly theoretical, and impersonal and illusive, but none the less real and objective and effective, is this same doctrine as it presents itself under the guise and sanction of Natural Law. The Natural Law philosophy was the skeptics' way of saying substantially the same thing; it was the old faith unitarianized. Being, moreover, less naive, it was less intelligible, and thereby less open to attack. And it had the usual merit of vagueness that it might mean pretty much anything — little or much or nothing. Better than this, also, it was rational, and struck hands across the ages with Greek philosophy and with Roman jurisprudence. It sounded not a little like the Law of Nations and breathed the air of Platonic idealism. But, best of all, it recognized and proclaimed a great stream of righteous tendency and great reservoirs of compelling force making for the good. God or no God, there was — and still is — a world of law wherein truth is immortal: Thus the right is destined to ultimate triumph; and progress reigns; and things essentially improve by their own inevitable unfolding; and the soul of things is just. Evolution is thereby the last word of scientific faith, and the ameliorative trend a popular certitude.

If, indeed, all this be not easy to state, it is easy enough to feel and to know, as most economists and all good citizens do now know it and feel it. All things are coming out all right; the situation will work itself clear; the world is getting better; time will solve the perplexities and administer the remedies; things will cure themselves; destiny guides us; the long laws are with us; something will be found to replace the wasted coal; the hills will reforest themselves somehow. If God is not benevolent, trends and forces and tendencies are. Let nobody "knock." This is the day of the optimist. Whoever doubts declares his own incapacity for sane thinking.

It must, however, be admitted that the *Laissez Faire* school of thinking was something more, and possibly something better, than a mere spontaneous religious faith or a naive natural-law metaphysics. Some measure of inductive support was commendably offered this *a priori* faith, and therewith a plausible case was established. The economists of the first half of the nineteenth century were engaged in the study of societies emerging from centuries of kingship, of government by classes, of stupid and unjust legislation. It was clear enough that the progress of society lay in the breaking down of legal barriers and limitations, in the sweeping away of the privileges of caste and class, and in the development of popular institutions under the form of local and individual initiative. The time was one of growth and advance. A wealth of achievement justified the advocates of industrial liberty as theorists and honored them as prophets. The era was a series of object lessons in the blessings of untrammelled individual activities and in the dangers of over-legislation and paternalism.

The benefits of increased freedom argued for the wider abolition of regulation, and the regime of liberty came to stand as the ideal toward which civilization seemed to tend. For most cases, it was manifest that what individuals and peoples chiefly need is to be let alone; that that part of human ill is small which kings and parliaments can cure. In the full flood of hope, economists argued learnedly that the good of each is always and inevitably bound up with the good of all; that in the marvelous divine order of things, selfishness of motive works out in altruism of results; that social ill-adjustments are due to too little liberty, too much meddling, or to ill-informed estimates by the individual of his own interests. Nothing remained but to enlighten the people in their freedom. The future could not lie with restraint, but with liberty informed with knowledge.

But all this concerns the present inquiry merely as indicating the presuppositions and as sketching the background of thought explanatory of certain important positions in current economic theory. Let these be restated. In ultimate essence competition is voluntary coöperation. Capital is wealth stored up for purposes of future production and consists solely of concrete instrumental equipment. The test by which a thing is capital is the test of technological serviceability as a factor for concrete production in the industrial process. The interests of labor demand the multiplication of capital. All incomes are derived from participation in the productive process. These incomes as distributive shares out of a jointly produced product of value are received by title of social service performed. Distribution is part and parcel of the productive process, takes

place within it, and is justified by it. The point of view from which the economic life is to be studied and by which it is to be interpreted is the social point of view. Each and every gainful occupation approves itself as socially productive, else it could not normally be privately gainful.

And now it will be worth while to subject these doctrines to the test of the pitiless facts. But, at the threshold of this unwelcome task, a caution is called for. If it should have occurred to the thoughtful that the foregoing equipment of concepts and categories and doctrines is especially reminiscent of the current productivity school of distributive theory, this suggestion must be promptly dismissed. Reminiscent of the productivity school it may in some sense be — but not rightly or especially or peculiarly so; for all these are the concepts and categories and doctrines of current economics in general. They are the common property of the classical and of the modern. This equipment of terms and theories and presuppositions is the common possession of economic thought in the large — not of this school or the other, not of ancient or of modern, not of cost doctrinaires or of utility doctrinaires, but of the genus economist in general.

But to the test of the facts: the truth is that the essential nature of capital is not to be found in its significance as a category of machines and tools and appliances. True, these things are capital, but so also is ice in the ice house waiting for summer, cider in the cask aging to vinegar, wine in the vault acquiring bouquet and flavor. Not even for the wine or for the cider is James Mill's explanation — that *these also work* — a competent account of their capital

character. Still less is it adequate for the ice, since during all the time of its keeping it is falling away in quantity. But each and all of these commodities are acquiring value with passing time; they are held for increment; thus they are capital. So the merchant's stock of goods is capital — but not as a factor of production in any industrial or technological process; and, if some one should suggest that these are merely private, not social capital, the answer must be: precisely so, — capital.

Nor is the test in the materiality of the product. Freight wagons or freight cars are surely somehow to be included within the capital category; then so, also, are passenger cars and taxicabs — despite the fact that they are rendering merely the service of transporting men. But then equally so are excursion boats or pleasure boats kept for hire. Evidently the test is neither in the technological character of the process nor in the materiality of the product.

Nor is the line of distinction to be sought by reference to the wholesomeness or to the social service of the product. Peruna and Hop Bitters and ribbons and watch fobs and caviare and mince pie and corsets are all wealth: they are marketable at a price: they have value as consumption goods. Not a few of us, like a late friend of the writer, glance back over our lives to wonder why everything that we ever really liked “was either extravagant or immoral or indigestible.” Economic productivity is not a matter of piety or merit or deserving, but only of commanding a price. Actors, teachers, preachers, lawyers, prostitutes, all do things that men are content to pay for. So wages may be earned by indicting libels against a rival candidate, or by setting fire to a competitor's refinery, or by sinking spices. The test of economic

productivity in a competitive society is the fact of private gain, irrespective of any ethical criteria and unconcerned with any social accountancy.

But if, with consumption goods, neither ethical nor social standards are theoretically decisive, or even relevant, for the question of value and marketability and economic productivity, so likewise are these tests equally inappropriate for the capital question. If whisky is wealth, distilleries are capital items. If Peruna is wealth, the kettle in which it is brewed must be accepted as capital. Then so is the house rented as a dive; and if the house is productive and is therefore capital, so, also, must the inmates be producers according to their kind. The test of social welfare is invalid to stamp as unproductive any form of wealth or any kind of labor. If jimmies are capital, being productive for their purpose, so also is burglary productive; if sand bags, so highway robbery. The principle decisive for gamblers' quarters and for gambling appliances holds for gambling. If the fees which the lawyer receives for pleading and winning an unjust cause are earned, so also are the daily receipts of the beggar upon the corner. Always and everywhere, in the competitive regime, the test of productivity is competitive gain. Whatever wealth serves the acquisitive end is capital. Profits are merely one form of personal pecuniary intaking from personal pecuniary activity. Lobbyists, panders, and abortionists are producers: that they are paid is the adequate proof. This is surely not to deny the fact of parasitism in society. But parasitism is not a competitive category; it is a concept irrelevant to competitive analyses and competitive doctrine. It has its place only when the facts are to be appraised in their social significance. It belongs to the *art* of economics rather than to the *science*.

That a complete acceptance of this private and acquisitive point of view is the only procedure possible, in the analysis and classification of the phenomena of a society organized upon lines of individual activity for private gain, is abundantly proved as soon as appeal is made to the facts and the processes of the actual business world. In the computation of competitive entrepreneur costs, the capital investment and the interest charge are reckoned upon a basis quite other than that of technological capital. Entrepreneur capital — capital in the guise in which the type form of modern business, the corporation, presents it — includes not merely consumption goods in stock but banking balances, counter money, funds tied up in customers' accounts and in bills receivable of many varieties, corporate stock and securities, whether held for sale or for investment, and generally all that fund of working capital, more or less unspecialized, requisite to the successful functioning of a business. The manufacturing entrepreneur or the corporation manager would find it a novel and perplexing doctrine which should restrict the capital investment to the buildings, machinery, and raw materials of the undertaking. The corporation really possesses nothing that is not capital. All things, then, that can be traded in, or valued, or rented, or capitalized, may fall within the meaning of the capital concept. In this sense of the term capital includes, *in the price aspect*, patents, copyrights, trade-marks, business connections, reputation, good-will, privilege, government favor, franchises, royalties, rights of toll and tribute, rents, annuities, mortgage rights, personal claims. And, further, it includes monopolies of no matter how various kinds and degrees, so far as they may become the subject of invested cost in

obtaining them, so far as they are bought and sold as steps in competitive-productive investment, or are vendible upon the market as capitalized dividend-paying properties. All of these are capital for our present purposes, since they get into costs in the actual competitive market production of such commodities — hats, wheat, machinery, stocks, etc. — as are actually marketed. All things which, from the entrepreneur point of view, appear as expedient expenditure for the purposes of creating either a commodity or a situation of market value are outlays of capital taking rank as costs of production. When the purchase of machinery is an advisable move in business policy, capital goes into it, as at another time into land or labor. When, in good business policy, a franchise must be had or a patent procured, capital is, in either case, so directed as to accomplish the necessary thing. When, for equally cogent business reasons, legislatures or city councils must be bought, the necessary outlays are, for cost and value purposes, precisely like expenditures for machinery or for the control of patented processes. Tramway franchises and sugar-refining tariffs, as situations business-wise obtained by the expenditure of capital, disclose in the current market values of the stock the present worth of the forecasted gains. So the expenses of stifling competition are capital outlays, invested as the costs of a monopoly to be obtained; so also the tribute paid to escape cut-throat competition is a capital cost of production.

All this should be easy of acceptance, but is in fact far from easy. Social appraisals are prone to disturb and to confuse all purely realistic descriptions and theoretical analyses of the facts of actual business.

What should be, gets mixed with what actually is. The case is as if the physician, because he ought to be sympathetic, were required to mix his hopes into his diagnoses and to write his sympathies into his prescriptions. One may condemn the poisoner's art, but this ought to argue that the chemist study poisons carefully rather than that he exclude them from his researches. Bacteriology would be of dubious service to human life if only beneficent bacteria were held worthy of attention. The zoölogist who could not see a snake would be a twin brother to the economist who can find capital only when there is social productivity, and who recognizes economic labor and economic wages only upon condition of social deserving. Economists will do well forthwith to recognize that rights of patent and royalty are capital; that rights of tribute through franchise privileges are capital; that police permits to rob passers-by after midnight are capital; that legislative authority to rob importers, both early and late, is capital; that royal patents for tax-farming the peasantry are capital; and that generally every property basis of private acquisition is by that very fact capital. Until Political Economy has achieved this much of wisdom, its doctrines can express nothing more than a pious and commendable aspiration; it will still be busy with picturing utopias or with analyzing hypotheses; on this basis it must continue to lack all touch with life, to make it itself a sheer farce — albeit coming as near to tragedy as comedy often gets.

The truth, then, appears to be that the grotesque unreality of current economic doctrine finds its explanation in the eighteenth century background of philosophy, religion, law, and ethical theory, under

which influences, and mostly determined by them, the system of economic thought first took shape. The presuppositions of English jurisprudence, and of the feudal common-law system, reinforced by certain of the doctrines of Physiocracy, worked out into a purely technological point of view and into a purely technological — and untenable — manner of regarding, of distinguishing, and of classifying the aggregate productive equipment. Presuppositions of religion, of natural law, of philosophy, and of natural-rights ethics concurred to stamp the economic process as fundamentally rational and beneficent, to obscure and even to deny the distinction between the social and the competitive, and to assume and even to assert the necessary parallelism between the private interest and the aggregate good. And the trend of economic development lent for a time strong support to this conviction. Thus the doctrine of the economic harmonies won a many-sided support. *A priori* probability was with it, and wide inductive verification was bountifully at hand. The economic process recommended itself as an automatic system of voluntary coöperation, a providentially and beautifully adjusted method of mutual service. Each distributive share appeared to be claimed by title of contribution to a product jointly and coöperatively produced. The factors in the process were conceived as technological factors and the title of each to remuneration was attested and worked out and determined by the degree of its technological contribution.

The productivity theory of distribution, that is to say, had not several decades to wait for its emergence; in essentials and in ultimate analysis it had already appeared. It remained only to amplify it. In phil-

osophical phrase, economics had only to become conscious of itself, to unfold its essential nature, to realize and to complete itself. Not that there was little to do. It still remained, for example, to work out its details and to emphasize the great truth that all saving is good — by the very fact that it must incorporate itself in social equipment. John Stuart Mill, it is true, was not quite certain of this, in view of the occasional happening that this saving could be detected flowing into government debts; but none the less was his accomplishment great in proving to the laborers that their employment and their wages were dependent upon the development of their employers' riches and upon the growth of the wage fund, — that the laborers' only hope of welfare was in having as few of themselves as possible and as many and as wealthy employers as possible. Perhaps no more beautiful and comforting harmony than this was ever disclosed. The interests of labor and capital have ever since been one — in the books.

But there is no need to carry the discussion further. The rest may well go without saying. Since the time that this social point of view got itself well established in economic thought and carried with it its equipment of concepts and terms and doctrines, all things indeed have remained well and harmonious — in the books. But only to the extent that economics has been inconsistent with itself, recurrently and sporadically falling away from the faith of the fathers, has it fallen into touch with life and with the things of business. Mostly, however, we can rejoice that the old faith still stands. Mostly we remain productivity theorists still.

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RENT AND PRICE: "ALTERNATIVE USE" AND "SCARCITY VALUE"

SUMMARY

I. The "alternative use" idea, 119. — A value or price notion, 120. — Assumes distinct land-use groups and margins, 121. — II. Its alternative-utility aspect, 121. — Not significant as a long-time factor, 122. — Limited significance as a short-time factor, 123. — Classification of land utilities, 124. — III. The alternative-supply aspect, 126. — Limitations, general and particular, 126. — Costs, 127. — Return to value view-point and *net* utility, 128. — Effect of unequal wealth distribution, 129. — IV. The relation of "alternative uses" to rent, 130. — Not causal or determinative, 130. — Some practical considerations, 131. — V. Mill's treatment of "scarcity value" and rent, 132. — Overlooks the significance of the intensive margin, 135. — Loose use of terms, 137.

THE following paper is the result of an examination of those cases in which, according to J. S. Mill, prices are in part determined by rent payments. In his *Principles*¹ Mill sums up the relation of rent to price as follows: —

"Rent is not an element in the cost of production of the commodity which yields it; except in the cases (rather conceivable than actually existing) in which it results from and represents a scarcity value. But when land capable of yielding rent in agriculture is applied to some other purpose, the rent which it would have yielded is an element in the cost of production of the commodity which it is employed to produce."

I

Mill's statement that, in case land capable of yielding a rent in agriculture is put to some other use, its rent will become an element in cost of production in the new use, — or, in other words, will

¹ Book III, ch. vi, §9.

enter into the price of the commodity it is then employed to produce, — opens up the whole question of the relation of so-called alternative uses to the theory of rent. In his statement there is a modification of the bald classical doctrine of rent as put by Ricardo, the full significance of which Mill himself probably did not realize, and which has been brought out by such writers as Jevons, Hobson,¹ and Patten. The concise statement of the limitation would be as follows: land exists of different grades; the statement that rent does not enter into price holds of necessity only for one class of product raised on one grade of land; the price of products raised on lands that have been put to the more productive of two alternative uses is in part a positive or "specific" rent.

It is desirable to examine this newer doctrine more fully and critically than has, to the writer's knowledge, yet been done. In such an examination two questions at once arise: (1) What are alternative uses and to what extent do they exist? (2) Do they give rise to "positive" or "intra-marginal" rents, — rents which *are* "an element of the cost of production"?

1. It must be observed at once that an alternative "use" is a price or value idea, — it assumes a price medium. It really connotes two factors, supply limitation and utility. It is desirable to separate the two, and discuss first the *alternative-utility* phase of the alternative-use idea.

As furnishing something of a key to the inquiry it may be suggested in advance, also, that if alterna-

¹ *Economics of Distribution*, p. 120: "What really invalidates the Ricardian treatment is the fact that most land in use has several alternative uses or can contribute toward several different supplies.

tive uses are to have any bearing upon the rent-price question it must be through alternative margins,¹ that is, through the existence of distinct margins for distinct land-use groups. If these do not exist, if all are reduceable to a common margin, mutually determined for the various uses, then there is no place for positive intra-marginal rents. That part of a land supply which has an alternative use can not be said to determine rent if its only claim to that distinction be such a use; for that would but throw one back upon the question, what determines the rent in that alternative use?

II

As the term "alternative use" is commonly employed it means that any unit of land which can produce wheat, corn, cotton, cattle, manufactures, has as many alternatives as products; and a typical conclusion is that "the rent of land for agricultural purposes must be counted as a part of the cost of the product of a market garden."² To the writer this statement of the case seems superficial, in that it overlooks the elementary facts that the essence of production is utility creation and that in consumption men tend to equalize the marginal utilities of things consumed.

Let perfect mobility be assumed; also, a uniformity in quality and intensity of wants. In short, assume a static state and a problem on the demand side

¹ The marginal unit is, of course, not necessarily the point of determination. This point is in the unit which will be the first to cease producing in the particular use under consideration. It may be above the marginal one if it has some effective alternative. It will be the one which has the most attractive alternative relative to its productiveness in the given use; it will be the worst unit which has the best alternative.

² Johnson, *Rent in Modern Economic Theory*, p. 86.

in normal value. Then remember that the end of production is the satisfaction of wants and desires: that what land produces may all be reduced to terms of the common denominator, utility. Then what constitutes the rent of land is the productivity of land in the satisfaction of wants, *whatever be the concrete medium*.

From this point of view the above conception of alternative use, loses significance in so far as it means alternative utility. It is not necessary to assume that all land produces wheat in order to bring about a single absolute margin. If the element of utility, want-satisfying power, inherent in all economic goods, be considered the essential underlying the form, a similar result is obtained.

So far land has been discussed as yielding general undifferentiated utility. With all disturbing and retarding conditions removed this would be sufficient. We must, however, turn to the short-time working out of these things in a dynamic society, to a problem in market value. Here we have to reflect that man's wants are — immediately — for food, for shelter, for standing room, and for pleasure-giving things; and, on the other hand, land furnishes fertility, location, mass, beauty. Thus it would seem logical to recognize these few utilities, at least, as fundamental in any analysis based on a recognition of the fact that in a dynamic society the ultimate essential works out slowly: that competition, mobility, knowledge, are not perfect; and that wants lie in different planes, so to speak, varying in their urgency and the means for their satisfaction. And on the basis of such an analysis certain land-utility uses, not immediately competitive, may be recognized, each having its own margin.

The meaning of this will become clearer if we return to Mill's case. From the statement that land capable of yielding a rent in agriculture may yield a rent when put to some other use, and that this will enter into the price of commodities resulting from the new use, it might seem but a short step to the doctrine of positive, marginal rents within purely agricultural uses. Between grazing and market gardening there is nearly as great a difference in externals as there is between market gardening and residence use. But Mill does not take this step nor draw conclusions from superficial distinctions. In addition to the general statement given above, he says :¹ "Land is used for other purposes than agriculture, especially for residence; and when so used yields a rent, determined by principles similar to those already laid down. The ground rent of a building, and the rent of a garden or park attached to it, will not be less than the rent which the same land would afford in agriculture: but it may be greater than this, to an indefinite amount. . . ." Sites desirable for their convenience, he says, have their rents determined by the ordinary laws of rent ; but those of remarkable beauty are "at a scarcity value." The only case considered by him, then, in which the existence of an alternative use may allow rent to enter into the determination of price, exists when agricultural land is applied to uses other than agriculture. Beside residence sites, which he evidently deems the chief instance of the phenomenon, he mentions wharfs, docks, harbor room, water-power, "and many other privileges."

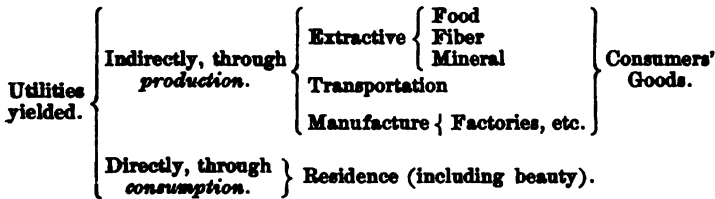
Thus Mill gives the principle of alternative use but a narrow scope as compared with the treatment

¹ Book III, ch. v, §2.

of some later writers; he does not divide lands into numerous use groups: he does not consider lands producing corn and lands producing wheat as belonging to distinct alternative uses, and having separate margins. He considers cases in which the alternative-utility use is — immediately at least — of a different order, in which land passes from the production of one utility to another fundamentally distinct. The cases he mentions represent a transfer from agriculture to a use in which desirability for residence as determined by beauty and convenience of location is the basis. This point is of no little significance; for, where units of land produce in such manner as to satisfy wants of the same order — where the consumers' goods, to the production of which land contributes, may be substituted — a problem arises which differs materially from the case that Mill considers. Residence use, harbor room, and dock space do not satisfy a man's hunger. The utilities of a building lot and of a corn field do not come to the same market. So far as market values are concerned, a logical recognition of the capability of land areas to produce different orders of utilities has some significance, — tho, as will be seen, not that assigned by Mill, Jevons, or Hobson.

Thus it may be logical to divide land into several non-competing use groups, and to distinguish as many separate margins. In one group place all lands which yield utility through extractive production, notably agricultural land. In a second group place such lands as owe their utility to their power to satisfy wants for building sites. These fundamental groups might be subdivided: agricultural lands being composed of food-producing, building-material-producing, and fiber-producing lands; build-

ing lands of (1) lands for mere residence, (2) lands valued for convenience or beauty of situation, and (3) transportation and factory lands. The rents of these non-competing groups of land may be measured from separate margins. On the basis of this analysis a logical classification of the lands of a society might be given as follows:



In the long run, lands whose utilities are yielded indirectly through production are brought into relation with lands whose utilities are yielded directly for consumption through consumers' goods in the shape of food products, clothes, and the like. But in short-time periods the utilities may be distinct.

Here a word should be added concerning terminology. Properly speaking, lands within a competitive utility group are not subject to alternative use within that group. They yield the same kind of utility, they have complementary utilities, but not in any significant sense *alternative* ones. These words stand for different ideas and it may be that confusion in their use has confounded thought.

From the economic standpoint, "alternative" has a "short-time" meaning, and should be applied when land in one group may be put to another and a distinct use in another group—as where agricultural land is used for residence. And it should be borne in mind that, economically speaking, there is no alternative use unless the net utility produced in one

use equals the net utility yielded in the other; for, unless the price of the produce in the one use at least equals that in the other, the land will not be put to a different use.

III

It is necessary now to turn to the supply-limitation element in alternative uses. The question becomes one purely of supply, — of pounds, bushels, acres. If possible, it will be well to keep clear of price and value ideas for a moment, thinking only of quantities of want-satisfying power. The existence of limits, general and particular, to the supply of land utilities is the salient thing.

In the first place, there is the general limitation, — the fact that land as a whole is limited in amount. This being granted, assume land to be of equal productivity. Under such an assumption there could be no non-competitive land groups so far as supply is concerned: rents would be equal for given areas, perfect competition being assumed. There would be but one intensive margin.

But, in fact, lands vary vastly in productivity according to situation and physical and chemical composition. There are, in the second place, then, certain particular limitations to supply. The (1) supply of lands suitable for certain products is limited, and the (2) supply obtainable from given areas of land suitable for the same product varies. That is, the supply obtainable with a given effort or investment of labor and capital varies. (Here the element of human cost must be introduced.) Accordingly there are (1) absolutely distinct groups whose supply margins will be unrelated, and (2) various margins, extensive and intensive, within these groups.

Where, by reason of the fact that the land can produce but one kind of product, it is from the supply side entirely unrelated and distinct from other land, there is no alternative use. Thus rice and corn are related as utilities satisfying food wants, but there is no direct relation between the supplies of land upon which they are produced. Such uses need no further consideration from the alternative-supply view point.

Where the supply groups are more or less closely related on the supply side, — as corn land and wheat land, or land for dwelling and factory use, — there is clearly a sort of alternative-supply use. Here the lands fall into what may be called a competitive supply group.

They may or may not be equally adaptable to the production of each of the various utilities. If they are, utility alone decides whether there are any distinct or determining alternative uses. We are thrown back upon the reasoning in our first division. But probably they are not. Then within this or that competitive supply group (*e. g.*, corn-wheat-rye land) there are various limits on supply set by costs of production on various areas, and these varying costs of production differ for different areas. One field may be able to produce more bushels of want-satisfying power in the shape of corn than of wheat with the same cost.

The supply of land for any particular use is limited, as is all land, and further by the fact that it can only be increased by taking land from some other use.

But the question is, does this fact of different relative facility of production within some potential supply group make distinct supply margins? Are the alternative-supply "uses" positive and determining or merely expressions of broader forces?

The only way to answer this question and to bring matters to some synthesis is to connect at once supply-limitation with the concept of utility already worked out. This means coming to a value or price point of view, when we can logically use the idea of *marginal* utility and of *net* returns.

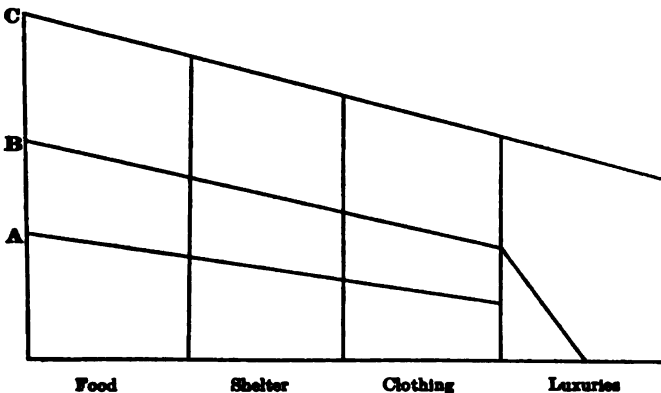
Now return for a moment to the assumption of equal competition and uniform demand and a problem in normal value. What happens then is this: in seeking to equalize the marginal utilities of goods men bring the price of each into relation with that of the other. Land which can yield utility in different concrete forms is subject to competition in the sense that it tends to be put to the use in which it yields the highest net return. The lands of the nation, of the world, even, tend to be arranged in a scale of productivity so that each acre will yield the maximum net utility. On this basis all units of land are thrown into one aggregate in that their annual values or rents are inter-related, being price-determined surplusses measured from a common no-surplus-utility margin. There would be *one* grade of land or one grade of investments upon land, so unproductive of utility that it could only satisfy the one who works and the one who waits. This land might be producing or yielding utility in the form of wheat, cotton, cranberries, or motor garages. The essential thing is that it produces no net or surplus utilities.

Here, again, the common notion of alternative use appears superficial. If rent "for agricultural purposes" is to be considered intra-marginal and positive, instead of going on to the margin from which it itself is measured to the no-rent margin for all land, it must be because the utilities yielded

by these lands are evaluated in different markets; otherwise, as price-determined surplusses, there would be a common margin. But, under the above assumption, the latter is the case.

Now if, following the previous procedure, we pass to market values, short-time conditions, and admit variations in marginal utilities and demand, the same non-competitive utility use groups appear. But we are in a position to make at least one addition as a result of bringing in supply-limiting considerations.

The utility groups distinguished above may be thought of as forming a series of vertical cleavages offering more or less obstacle to a free inter-relation of utilities and margins. Now the supply-limitation factor makes possible and necessary a grouping of wants and utilities in relation to limited supply which cuts across these vertical groups with a horizontal cleavage. For, passing from the assumption that wants are similar in quantity and quality, we note that in fact wealth is unequally distributed, which makes unequal purchasing power or "effective demand." A rough attempt to suggest the result is indicated in the following diagram. Let



A be the consumption of the poorer classes, B of the middle classes, C of the wealthy. They form market layers or strata which do not coincide.

So far as the demand for Fifth Avenue residence utility, diamond mines, game preserves, manufacturing sites for silks and luxuries of various kinds is concerned, the poor may be eliminated. Here are distinct price markets and margins.

IV

Such being the nature and occurrence of "alternative uses," does the rent of agricultural land, for example, become an "element in the cost of production of the commodities which it is employed to produce" in another use? Do alternative uses which are truly such give rise to positive, intra-marginal rents?

If by becoming an element is meant a causal or determining one, the answer is no. The price which expresses the utility yielded by building land, and from which its rent is drawn, is fixed on building land and measured from that which yields no rent. If the price fixed here so rises that agricultural land will yield greater net utility in the building group it is taken up, but *not until the higher price has been determined.*

If A is debating whether to put his lot to growing celery or build upon it, the decisive thing is the price to be expected for each utility. This determines what his gross return would be in either use. It then remains to figure on his expenses, among which he counts his rent. But the question is, not what A figures in his expenses, but *what determines this*

rent and what is its relation to the price which A has counted upon? the price which the consumer will pay? This is the more fundamental question.

The true significance of the non-competing use groups just distinguished is this: when agricultural land, for instance, goes to building use through price change it has a potential alternative use, whose effectiveness depends upon prices determined in another use market which has but an indirect connection with the former. As a result of this fact this land may pass from one use to the other. It *must*, economically speaking, whenever its net or surplus utility is greater in the other use. It then has no alternative. In the transition it affects the supply of residence or building utility, and so, indirectly, the price and the margin of such utility. Thus marginal utilities are equalized.

To sum up, from the viewpoint of marginal utility the doctrine of so-called alternative use is of limited significance in the theory of rent. It applies only in the case of lands having utilities in groups of a different order dynamically, that is, non-competitive use groups, and only operates when and where the surplus utility approaches equality in two such use groups, which approach finds expression in price changes. Land may then pass over—it must—and its rent be measured from a different and distinct margin. In so doing it affects the supply of utility yielded in the new group, and thus, indirectly, through the forces of supply and demand which determine price and margin and rent, affects price. The existence of separate margins in non-competitive land uses does not mean that land rent is the less a permanent price-determined differential.

Some practical considerations are the following:

(1) But a very small part of all the land used in agriculture has an alternative use for residence, or other purposes. (2) Once transferred from the agricultural to the residence group, land becomes so specialized as not to pass back readily, and prices and rents may fall considerably below the return to be got in agriculture before it will be devoted to farming. (3) Land frequently varies in quality within a small area, and marginal land will be found on many farms and ranches, which in turn are scattered over the country, thus, obviously, rendering practically impossible the operation of alternative uses.

So much for Mill's treatment of alternative use as a factor which causes rent to enter into prices. He makes an important exception to the sweeping statement that rent can never affect price, but does not give a very extensive application to it. We conclude that even in the cases given rent does not determine or fix price.

V

But it will be remembered that Mill makes another possible exception. He says that in certain cases, "rather conceivable than actually existing," rent which represents a scarcity value may become an element in the cost of production of the commodity which yields it.

In order to do justice to Mill it is here necessary to determine exactly what he means. Does he mean that, as Marshall points out, the extension of the cultivation of certain crops may cause a rise in the rent of land used for certain other crops to which it might have been applied? By no means. He

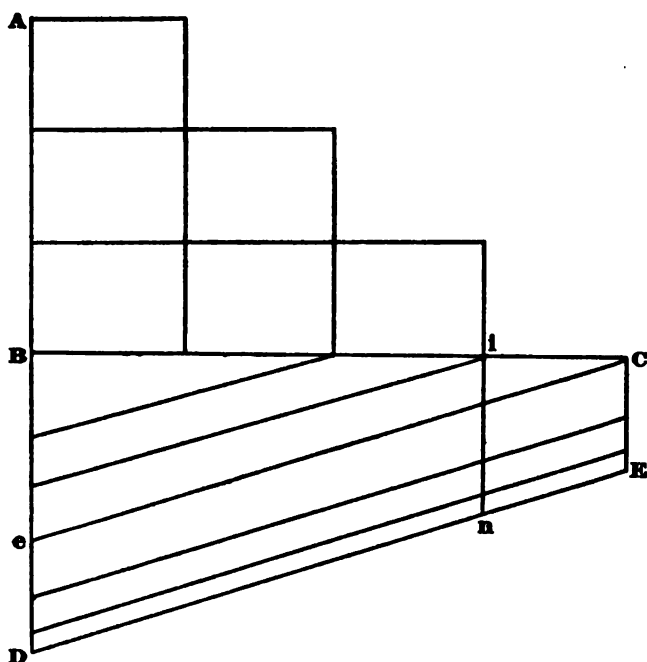
gives three illustrations of what he means: (1) In the case of mines he states that the worst mine may itself yield a rent¹ because of a sudden increase in demand. (2) In the case of fisheries, if, in the face of an increasing demand, there are no more fisheries available, "the value, doubtless, may rise to a scarcity rate, and the worst fisheries in use may then yield a considerable rent." (3) In the case of a country so fully peopled that all the lands are under cultivation while there can be no importation from other countries, land and its produce will rise to a monopoly or scarcity price, and under such circumstances Mill conceives that rent "very largely" may form a part of cost (and so enter into the determination of price).

Consider the last case first. Imagine with Mill an island so filled with people that every inch of land not necessary for dwelling and standing room is under cultivation. Under such circumstances would there be a positive, "specific" rent at the margin? The answer seems to be clearly in the negative. Mill himself defines rent as being a differential return which merely equalizes the profits of different farming capitals, by enabling the landlord to appropriate all extra gains occasioned by the superiority of natural advantages. Such being the case, as long as there are different degrees of profitableness in the employment of this agricultural capital—due to different land qualities—there will be a no-rent margin from which to measure the superiority of profitableness. We are speaking here of the entire quantity of available land considered in all its uses. In this connection a diagram may be presented with advantage.

¹ Book III, ch. v, §2.

² Book III, ch. v, §2.

Let B C in the diagram represent the amount of land in our island. It is successively taken into cultivation, until the last (or worst, rather) unit is reached, as to which unit all other units will yield a surplus. We are not for the moment considering the intensive margin, and such being the case, the last unit iC, when taken under cultivation will yield nothing over the cost of production, but the aggregate rent will be ABC. Thus far there has been no rent at the margin.



Now suppose, with Mill, that the population continues to increase and the price of food to rise. Obviously a more intensive cultivation must be resorted to. The result is the quantity, BeC. Fur-

ther increases in the demand result in a production of BDC, and the last unit, *iC*, produces *iC*. But is this a price-determining surplus? So Mill states.

It seems that Mill is in error. He is right in holding that the marginal unit of land (*iC*) may, from the extensive standpoint, yield a rent; but he is wrong in inferring that this rent enters into price. The rent arising on the poorest land in cultivation is in its turn simply a differential return to a more profitable investment of labor and capital as compared with the least profitable application which the increasing demand has made necessary.

We may speak of two margins: the extensive and the intensive margins.¹ *BC* represents the former; *DE*, the latter. Mill seems to think that the product arising below the extensive margin, *i. e.*, *BCD*, is a cost and enters into the fixation of prices, or at least that is the logical outcome of his statement that the rent on the unit that was the extensive margin will enter into price. But the fallacy of the position is apparent. With the growth of population on the island we are merely driven from one margin to another, — from a vertical extensive margin to a horizontal intensive margin, — and this is true not only for the land as a whole, but for that part of it (*iC*) that was on the extensive margin.

The two other cases in which Mill leaves the inference that on account of scarcity positive price-entering rents may exist at the margin, may be criticised in a similar manner. If the rise in price is temporary, it results in what may best be called

¹ See Prof. Hollander's article on "The Concept of Marginal Rent" published in this Journal, January, 1895.

pure profits; if it lasts, there is a new and lower margin. In any case, the rise is price-determined.

In his *Economics of Distribution* Hobson supposes¹ a case like Mill's and concludes that "the worst land in use may or must pay an actual rent. This will not be a differential rent, but a forced or scarcity rent." This statement is unsound for the same reason which invalidates Mill's reasoning, and Hobson's whole argument is vitiated by a false separatism in not considering together the extensive and the intensive margins. He is inconsistent, too, in that he seems to forget his own insistence on "land use" rather than land acres as a basis of payment for land. While it is true that a rent may arise on the poorest unit of land area, there is a no-rent land-use. Here lies the significance of the intensive margin.

A somewhat different phase of the same fallacy is apparent in a recent article published in these columns. The writer says, "Where monopoly power of any kind exists, absolute intensive marginal rents will appear. These rents will enter price as do wages and interest. . . ."² The reasoning seems to be based on the idea that a "normal flow" of labor and capital is obstructed thus causing an intensive margin "which is actually higher than that of land employed in other enterprises." But does the fact of a higher intensive margin — assuming it to be true — mean a positive rent at that margin? — one which enters price? Not if the reasoning of this paper is sound. Nor does the article referred to show how a higher intensive margin

¹ p. 120.

² Quarterly Journal of Economics, August, 1906, p. 606. Relation of Marginal Rents to Price, by F. T. Carlton.

causes "absolute marginal rents." It might as well be argued that because a poor farmer may not work his land with sufficient capital,—and whose intensive margin is consequently higher than his better equipped neighbor's,—intra-marginal rent appears upon his land, and enters the price of his produce.

It is probable that Mill fell into error partly through a loose use of terms. His language is inconsistent. He first defines rent as a surplus over cost of production, and states that it is the result of the sale of commodities whose value "is not, correctly speaking, a scarcity value." How then can he consistently say, "A commodity may . . . yield a rent even under the most disadvantageous circumstances of its production; . . . when it is . . . selling at a scarcity value?"¹

Again, it will be remembered that Mill used the phrase "cost of production" rather than the word "price," saying that rent is an element in the cost of production of the commodity which yields it in certain cases² where it represents a scarcity value. But how can a return which is a surplus above the cost of production enter into the determination of that cost? It might be possible at least to argue the statement that such a surplus entered into "*price*," but that it should largely determine that quantity to which it is a surplus is inconceivable.

It would seem that Mill has in mind what are really two different classes of surplus, both of which he calls rent; but one of which is profits. On the one hand he defines rent as a differential which is not a result of scarcity value, but of the "circumstances

¹ See Book III, ch. v, §12, and 4.

² Book III, ch. vi, §9.

of production." On the other hand he says a rent may result at the margin from an increase in demand relative to the supply, — i. e., from scarcity. These ideas are in contradiction, and the latter kind of "rent," so-called, is really pure profits.

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STANDARDIZING THE WAGES OF RAILROAD TRAINMEN

SUMMARY

Increase of wages planned by trainmen in 1907, but not pressed because of the panic, 140.—New movement in 1909, 141.—The first attack came on the Baltimore & Ohio. Arbitration and award under the Erdman Act, 144. — Arbitration on the New York Central, and settlement on the same basis on other lines, 148. — Effects of "standardization"; inequalities remain, and are even accentuated, 151. — Connection between increase of wages and advance of freight rates; the trainmen exert pressure for higher rates, 157.

IN the recent hearings on the proposed advances in freight rates, the railroads laid stress on the increases in wages of employees. Abundant evidence was introduced to show how this one item in the aggregate had increased operating expenses, but little information was offered to show the results in specific cases. The subject is of sufficient importance to justify the recital of some such detail, to trace the inception and partial success of the efforts of the employees' organizations to "standardize" rates of pay, to point out instances where standardization has defeated its object by creating new discrimination, and to note the effect which the arbitration proceedings and standardization have had and may have on the relations between the railroads and their employees.

For the purposes of this article, railroad trainmen will include conductors, train baggagemen, brakemen, flagmen, and yard switchmen. They are strongly organized, the Order of Railway Conductors con-

trolling road conductors, and the Brotherhood of Railroad Trainmen embracing train baggagemen, brakemen, flagmen, yard conductors, and yard brakemen. The engine crews belong either to the Brotherhood of Locomotive Engineers or the Brotherhood of Locomotive Firemen and Enginemen. All of the brotherhoods work under the "open shop" policy and their administration, compared with that of other labor unions, has been marked by conservatism and moderation. The engineers and the firemen negotiate and maintain their working agreements separately, but the conductors and trainmen usually appoint a joint committee to represent the two orders in conferences with the management on rates of pay and working conditions.

The unit of service in the operation of trains is the train mile, and the compensation of men in train service is regulated by the rate per mile. Formerly, per diem or trip rates were the rule, but the mileage basis (advocated by the employees' organizations) is now general, except in switching service, where the rate per hour remains.

During the latter part of 1907, with traffic unprecedented in volume and the railroads not only taxed to the utmost capacity of their facilities but also unable to obtain experienced men, the organizations planned to demand an advanced wage scale with the beginning of the new year (1908). But before negotiations were fairly begun, the effect of the financial depression of 1908 was apparent, and the employees saw the futility of adhering to their program. Instead, their strength was successfully directed toward overcoming the efforts of some of the railroads to reduce wages. The Boston & Maine, for instance, asked its men to accept a 5 per cent cut for a few months.

The men were not unwilling thus to help the company through the crisis, but their leaders would not permit them to accept a reduction, even tho temporary, fearing no doubt that the precedent would be followed generally by all the railroads. A proposal to reduce wages on one of the railroads in the south was frustrated by President Roosevelt, who threatened to institute a Federal inquiry if an attempt were made to diminish the compensation of employees. It was evident that continued efforts to reduce wages would result in conflict with employees; it was plain also that if such a conflict occurred, the railroads would have the active opposition of the President. Under the circumstances, wages were not reduced, but forces were cut to the quick, and a large part of the program for construction or improvement of facilities abandoned. From the railroad viewpoint, the one saving feature in the situation was the opportunity to clear the service of some of the undesirable men who had been employed in 1907, when men better fitted for railroad work were not available.

In October, 1909, representatives of the conductors and trainmen of all the roads east of Chicago and north of the Chesapeake & Ohio Railroad met in Boston and formed the Eastern Association of General Committees. At this meeting, a standard wage scale, based on the western rates, was adopted. The roads radiating northward, westward, and southward from Chicago have been obliged to pay higher rates than in the east, and the brotherhood officers have been trying for years to bring the eastern roads to the Chicago standard. After the new basis had been duly passed upon and approved individually by the men through the local lodges of the organizations, the managing officers of all the eastern roads, were,

on Monday, January 3, 1910, simultaneously served with a formal demand for the new wage schedule. Answer was requested on or before January 20th, with the suggestion that the railroads facilitate negotiations by dealing jointly with the organization leaders.

There was difference of opinion among the railroad officers as to how the concerted action of the organizations should be met. In the west, a precedent had already been established by the Chicago General Managers' Association in dealing collectively with organization leaders and committees of workmen, and the suggestion was offered that the machinery of the General Managers' Association of New York be utilized in coping with the present emergency. This method would have facilitated settlement and enabled the railroads to show a solid front in meeting demands which were regarded by them as unreasonable. In the light of subsequent events it is now evident that concerted action would have been advantageous to the railroads. But the plan did not have unanimous support. It was decided, eventually, that each road should meet its own employees independently, decline the wage scale as presented and make the best compromise possible. Prominent railroad managers had publicly stated that the high cost of living justified a reasonable increase in wages. In meeting the committees the officials conceded freely that a revision of the wage schedule should be made to meet new conditions. There was no disagreement on the main question; the difference of opinion was as to the *extent* of the increases.

When the managers and the committees met to discuss the proposition it was evident that the committees in themselves had no authority to deviate

from the scale of wages as presented. It was plain that the organizations were determined to fight. The local committeemen stated frankly that under instructions from their grand officers nothing short of the whole schedule could be accepted.

Very little was accomplished in the preliminary skirmish. Both sides stood firm while the organization leaders planned the line of attack. Their first problem, the selection of the road on which to begin operations, was an important one, and at the outset it seemed that the choice would lie between the Pennsylvania, Baltimore & Ohio, Lackawanna, and New York Central. The Pennsylvania had always paid the highest rates, but the employees were not as strongly organized as on other roads and, moreover, this road had been conspicuously successful in preventing labor union encroachment in matters of management. The Lackawanna offered an attractive field on account of its financial strength, the Central was strongly organized. The Baltimore & Ohio had the combination of wage rates nearly as high as the Pennsylvania, and much stronger labor organization. Finally, it was decided that the first test should be made on the Baltimore & Ohio, and early in February the management of that road found arrayed against it the full strength of the Order of Railway Conductors and Brotherhood of Railroad Trainmen, with the other organizations interested spectators, prepared to claim their share of the spoils.

President Willard of the Baltimore & Ohio had just assumed office, and when affairs reached a critical state he personally conducted the negotiations with the organization leaders. Efforts to compromise were fruitless. A strike vote was taken, and a conflict seemed inevitable. Arbitration was offered but de-

clined by the men. President Willard then suggested mediation, and altho this was not agreeable to the labor leaders they finally concurred in the request of the railroad that Chairman Knapp, of the Interstate Commerce Commission, and Commissioner Neill, of the Bureau of Labor, adjust the differences under authority of the Erdman Act. After a series of hearings, an award was given, which, considering that the Baltimore & Ohio (with one exception) already had the highest rates, was a distinct victory for the men. The following table will show the result in a few typical instances:—

*Wage Rate in Cents per Mile*¹

Class of Service	Old Rates	Rates Demanded	New Award	Per Cent Increase
Through Passenger Conductors	2.60	2.75	2.68	3.1%
Through Freight Conductors	3.465	3.80	3.63	4.8%
Through Passenger Brakemen	1.33	1.65	1.50	12.8%
Through Freight Brakemen	2.31	2.53	2.42	4.8%

While the Baltimore & Ohio negotiations were in progress, the relations between the New York, New Haven & Hartford and its trainmen had been strained almost to the breaking point. After protracted conferences and the company's final refusal to grant the rates called for by the Eastern Association schedule, a strike vote was taken and the leaders were empowered to go to any extreme to force the issue. About this time, the Baltimore & Ohio award was handed down and a compromise was effected under which the same basis of rates was applied to the New Haven system. The comparative results, in a few typical cases, are tabulated:—

¹ Passenger crews average 155 miles per working day; freight crews, 100 miles.

Wage Rates per Mile or per Day

Class of Service	Old Rates	Rates Demanded	New Basis	Per Cent. Increase
Through pass'r conductor	2.15c.	2.75c.	2.68c.	24.7%
Local " "	\$3.60	\$4.25	\$4.20	16.7%
Through freight "	3.35c.	3.80c.	3.63c.	8.3%
Through pass'r brakeman	1.25c.	1.65c.	1.50c.	20.0%
Local " "	\$2.20	\$2.55	\$2.50	13.8%
Through freight "	2.35c.	2.53c.	2.42c.	3.0%

Under the old rates, a conductor running a through passenger train from Boston to New York, on duty from five and one half to six and one half hours, was paid \$5.00. Now he receives \$6.22, an increase of 25 per cent. His compensation averages \$1.00 per hour. The brakemen on the same train formerly were paid \$2.90; now they receive \$3.48, an increase of 20 per cent. Their compensation averages more than 60 per cent per hour, their work and responsibility are light, and in many cases their experience in railroad service does not cover more than two or three years.

Following closely on the New Haven settlement, negotiations were concluded on the same basis with the Boston & Maine road. This had the same passenger wage rates as the New Haven with lower freight rates. The Boston & Maine freight men, therefore, received a relatively greater increase than that shown in the foregoing comparative table.

While the program of standardization was progressing in New England, the committees on the New York Central were contesting for higher pay. First, they demanded the Eastern Association standard rates, but when the Baltimore & Ohio basis was applied

to the New Haven and Maine systems, the Central committees withdrew the original demands and insisted on the Baltimore schedule. The New York Central held, with good reason, that the rates awarded on the Baltimore & Ohio to meet the physical and traffic conditions obtaining on the mountainous divisions of that road could not fairly be applied to the New York Central — a level, four-track road, fully block signalled, running frequent express passenger and fast freight trains with very few stops. The Baltimore & Ohio mileage rate, made sufficiently high to enable its trainmen to earn fair wages, would give unreasonably high wages on the New York Central, with its more favorable operating conditions. For instance, a passenger conductor, then paid \$144 per month, running between New York and Buffalo, 439 miles, making 18 one-way trips per month, would receive \$212 per month on the Baltimore basis, an increase of 48 per cent.

In other respects, the Baltimore & Ohio basis was held by the New York Central management to be inapplicable to its conditions, and therefore could not be granted. The situation became tense and strike talk was prevalent. As a result of an individual poll of the members, the leaders announced an overwhelming majority in favor of extreme measures to gain their point.

Meanwhile, the company had offered a compromise wage scale which carried with it substantial increases. This being rejected, President Brown offered to arbitrate, but the organizations refused to jeopardize the advantages already gained on the Baltimore & Ohio, and the other roads which had adopted that basis. They would consider nothing short of that schedule. The railroad, realizing the serious results

of a strike in its effect upon public convenience and sentiment, suggested first that the aid of the Erdman Act be invoked so that the mediation committee might award a new wage basis more applicable to the New York Central. The brotherhood leaders would not join in the request. The company then suggested that the subject be referred to the up-State Public Service Commission. This, too, was declined by the men. As another alternative, the company suggested that the presidents of the Chambers of Commerce of the important cities along the lines of the New York Central be asked to act as an arbitration committee. This, however, with the two previous arbitration plans, was rejected, and, finally, President Brown proposed the selection of a committee consisting of Mr. E. E. Clark, of the Interstate Commerce Commission, and Mr. P. H. Morrissey, President of the American Railroad Employees' and Investors' Association. Mr. Clark, for many years, was Grand Chief Conductor of the Order of Railroad Conductors, a position which he resigned when appointed to the Interstate Commerce Commission. Mr. Morrissey, similarly, had a long experience as a railroad labor leader and for several years prior to the acceptance of his present position, was Grand Master of the Brotherhood of Railroad Trainmen. Both were skilled in the principle and practice of wage negotiation, and, since the New York Central had sufficient confidence in their fairness to leave the adjudication of the whole subject to them, the committees could hardly afford to decline the proposal. Mr. Clark and Mr. Morrissey both accepted and no time was lost in entering upon the task.

In the meantime affairs on the Lackawanna Railroad had reached a critical point. The company had

refused absolutely to concede the Baltimore schedule, offering instead a flat increase of 6 per cent. On their part, the men would not recede from their ultimatum: Baltimore rates or a strike. The seriousness of the situation may be judged from the fact that a strike was actually ordered, and the order withdrawn but an hour or two before the time set, when an agreement was reached to accept the results of the New York Central award. A few days later, similar action was taken on the Delaware & Hudson where the committees had been in session with the management unsuccessfully endeavoring to obtain the Baltimore basis.

Hence, in undertaking to arbitrate, Mr. Clark and Mr. Morrissey knew that the scope of their award would include not only the New York Central, but two other railroads, serving different sections (notably the anthracite region) and having widely differing physical and traffic characteristics. It was agreed, however, that the evidence and argument should be confined to conditions on the Central road, and altho the Lackawanna and Delaware & Hudson, were to abide by the terms of the decision for the New York Central, and the Lackawanna was represented at the hearings, they were not permitted to offer evidence nor present arguments on their local conditions.

The agreement defined the scope of arbitration as between the rates of pay then in effect and the rates demanded by the Eastern Association standard. It was a foregone conclusion that the new award would follow closely along the lines of the Baltimore award, and in this neither side was disappointed. The only question in doubt was the number and extent of the exceptions to suit New York Central local conditions. In local passenger, slow freight and yards, the award

was identical with the Baltimore & Ohio, but in through passenger service the company gained an important advantage in the recognition of the fairness of a lower mileage rate on long runs between New York and Buffalo. Instead of the standard rate of 2.68c. per mile, the award called for 2.4c.; and in certain cases it specified that on shorter runs a rate of 2.5c. would obtain until next year, when the standard rate would become effective. A similar concession was made in the fast freight runs. Instead of the standard rate of 3.63c. per mile applying at once, a rate of 3.4c. was made to apply until January 1, 1911. A comparison of the old and new will illustrate the differences:—

Wage Rates per Mile or per Day

Class of Service	Old N.Y.C. Rates	Eastern Ass'n Rates	New B.&O. Rates	New N.Y.C. Rates	Per Cent Increase over old basis
CONDUCTORS:					
Through Passenger	1.756c.	2.75c.	2.68c. ¹	2.40c.	36.7%
Suburban Passenger	\$3.58	\$4.25	\$4.20	\$4.20	17.3%
Through Freight	3.00c.	3.80c.	3.63c.	3.63c.	21.0c.
Local Freight	3.55c.	4.05c.	3.975c.	3.975c.	12.0%
Switching, day	\$3.30	\$3.80	\$3.70	\$3.70	12.1%
Switching, night	\$3.50	\$4.00	\$3.90	\$3.90	11.4%

Under the new basis, to take the illustration already used, a conductor making 18 one-way trips per month between New York and Buffalo, is paid \$190, an increase of \$46 per month or 32 per cent.

The award was dated May 4th, and the rates were made retroactive to April 1st. In making them effective, the Lackawanna attempted to apply to its through

¹ Applies only to through runs between New York and Buffalo; other through runs of more than 155 miles per day take the B. & O. rate of 2.68c. per mile.

runs the exception provided for the Central in the case of its New York-Buffalo crews, and thereby renewed the hostility of the organizations. They refused to permit the exception on the Lackawanna, and on appeal to the arbitration board they were sustained. A passenger conductor running between Hoboken and Binghamton, 206 miles, now receives \$5.62 for the trip of five and one half to six and one half hours; formerly he was paid \$4.02. The increase per day amounts to \$1.50 or 37.2 per cent.

A few days after the publication of the New York Central award, its terms were adopted substantially in effecting settlements between the managements and employees of the New York Central Lines west of Buffalo, including the Lake Shore, Michigan Central, and Big Four.

Thus the wage basis set by the mediators under the Erdman Act for the Baltimore & Ohio established a new high level which was at once adopted *in toto* by the two principal railroads of New England (now under one management). It has been shown also that the attempt of the Central, by further arbitration, to get away from the Baltimore award, was successful only in one important respect; and that, under the guise of a new award, the Baltimore schedule was forced upon the Lackawanna and Delaware & Hudson, and finally upon the Central System Lines west of Buffalo.

There remained two important roads in eastern territory on which settlements had not been effected,—the Pennsylvania and the Erie. The latter made an earnest appeal for immunity from the high wage rates, pleading financial inability to pay them. But the insistent cry for standardization would not be stilled by statistics showing the company's indigence. An

exception for the Erie would have made a troublesome precedent for the labor leaders and the road was unsuccessful in its plea for a favorable differential. The leaders of the organizations did agree, however, as a concession, to advance the date on which the standard rates should become effective, and thus permit the Erie to pay somewhat lower rates until September, 1911.

On the Pennsylvania Railroad, the differences assumed a serious aspect. In some respects, working conditions had been more favorable than on neighboring lines, and it had so long been the policy of the road to pay the highest rates in its territory, that the employees came to regard this distinction as a right rather than a favor. Therefore, at the outset, the men were frank in expressing their expectation that the advantage so long enjoyed would be continued. In other words, the Pennsylvania was expected to pay higher rates than the Baltimore & Ohio and the other roads which had adopted its basis. It is doubtful whether the employees individually were in sympathy with their leaders in their attitude on this particular point. They did vote individually to support their organization officers if a strike was considered advisable, but before such an extreme measure became necessary, an agreement was reached under which the New York Central award would apply, except where Pennsylvania rates were then higher, in which case the existing rates would not be reduced. The settlement of this difficulty practically completed the work of standardization in the eastern territory.

Having thus traced the history of the standardization movement, attention will now be directed to some of its influences. Its underlying principle is to insure that a workman on one division will receive as much

for his skill and services as any other workman performing similar service, whether it be in the same locality, or on another division or road. The trend of standardization is always upward, never downward, the low level men being lifted to the higher plane. The weakness of the recent movement lies in the fact that its scope included only the *rates* of pay. No account was taken of differences in physical and traffic conditions and little regard for differences in localities. The rate per mile is the same, whether it be made on a single track, mountainous branch line or on a level, four-track road, where it is possible to run 100 miles in very much less time than on a single track. Again, the rate per day in suburban or short-run passenger service is the same whether the man makes several round trips which keep him on duty most of the time, or when very small mileage is made and the man is off duty the greater part of the time. For example, the train crews on the short branch lines have always been paid less than the men in main line suburban service. Branch line service is not so exacting; there is less responsibility, particularly on short branches with but one engine and crew. The hours are more regular and usually there are long lay-over periods between trips in which the crew is not required to do any work. It is possible, in most cases, for the men to take all their meals at home and to live a regular home life, particularly when employed near localities where rents and other living expenses are low. These advantages have been sufficient to make branch runs attractive, even at lower wages. On one of the roads a branch line conductor, prior to the recent changes was paid \$3.25 per day; a conductor on the main line in suburban service was paid \$3.84. The arbitration award has placed them on a parity and both receive

\$4.20 per day. The main line man, performing more work and harder work for his **\$4.20** than the man on the branch, is paid the same sum.

Another instance of inequality is in the relation between road freight rates and yard switching rates. A freight train brakeman receives **\$2.42** for 100 miles or less if made in 10 hours or less. His runs are usually so arranged that he makes a trip out of his home terminal one day and returns the next day, thus necessitating his taking rest at the opposite terminal, where he must rent a room or otherwise arrange for a resting place and meals, with the consequent expense. In slow freight service there is no regularity to his hours—the crews are in a “belt” and are run “first in, first out” according to the demands of the service. He is therefore unable to have regular home life or to make social engagements. In contrast with these working conditions, the yard brakeman or switchman has regular hours. If he lives near the yard he can have all his meals at home, has no road expenses, can sustain normal home life and work under conditions which are more attractive than road freight work. Yet he receives **\$3.40** for 10 hours of day service, and **\$3.60** for the same number of hours at night, an average of **\$1.08** more per day than the road brakeman. To be sure, the work of the switchman is hard and dangerous; a large proportion of injuries to employees occurs in yard service. But road freight work is also hazardous, particularly on mountain grades where the brakemen must ride out on top of the train. The difference in risk and work in yard service, whatever it may be, is nearly offset by work which entails less responsibility and regularity of hours which permits a more normal home life. Undoubtedly yard brakemen should get slightly higher wages, but an

increase of 45 per cent over the road rate is hardly reasonable.

A freight conductor is paid \$3.63 for 100 miles or 10 hours. A freight brakeman's rate is \$2.42, or 67 per cent of the conductor's rate. In yard service, the day conductor is paid \$3.70 and the day brakeman \$3.40 or 92 per cent of the conductor's wages. The brakeman in yard service is paid 45 per cent more than the same man in road service; the yard conductor has only 4.7 per cent more than the freight conductor. The road brakeman receives only 67 per cent of the conductor's rate; in yard service the brakeman's pay is 92 per cent of the conductor's wage. The differences in work and hazard require some distinction in pay but none so great. Again: The pay of a yard engineer on one of the New England roads before the recent increases was \$3.84 per day; the night yard brakeman's was paid \$2.50, or 65 per cent of the engineer's rate. Now the engineer is paid \$4.11 and the night yard brakeman \$3.60 or 88 per cent of the engineer's wages. The discrimination lies in the fact that the engineer's pay was increased but 7 per cent, while the brakeman, through the process of "standardization," was awarded an increase of 44 per cent.

There has heretofore been some equality between the rates paid to the firemen and brakemen in yard service. Now the yard brakeman receives \$1.25 per day more than the fireman. The negotiations between the companies and the engineers and firemen were completed or were well under way before the Baltimore & Ohio award was handed down and was forced upon the other roads. Consequently, the disturbance of ratios of long standing has caused some disaffection on the part of the engine crews, who acted independently and were not a part of the standardization

program. They have no fault to find with their own rates of pay, but feel that the conductors and trainmen are receiving more than their fair share of the wage increases.

The question may be raised as to how the men themselves regard the inequalities between road and yard service. A satisfactory reason for their apparent indifference does not suggest itself unless it is that the greater fascination of train service makes up for the smaller wages. The romantic features of life on the road appeal particularly to the "green" men, and if they elect road service when they begin, they must stay in road service if they would retain their seniority rights. Probably, too, the younger men do not appreciate as fully as the experienced and married men, the advantages of regular hours and home life.

It has already been noted that an actual discrimination between men of the same class results from the abolition of the different mileage rates for divisions of different physical and traffic characteristics. The Baltimore & Ohio award of 3.63c. for conductors and 2.42c. for brakemen has been applied uniformly in freight service by all railroads in the eastern territory, where formerly the rate was scaled to meet local conditions and insure reasonable wages. A typical case on the Lackawanna system will illustrate the point. When first the mileage basis for paying train crews was adopted, the Buffalo division freight men, operating over a practically level road, were paid a slightly lower rate per mile than the freight men on the Scranton division, which abounded in grades and curves. By reason of physical advantages, the Buffalo division men made their mileage in less time, made it easier, and earned more money per month

than the Scranton division crews, notwithstanding the higher mileage rate on the mountainous division. The new basis has now levelled this distinction between the two divisions, to the disadvantage of the Scranton division. The Buffalo men will make no complaint but the Scranton men will surely feel aggrieved because of the loss of the premium of long standing. A Buffalo conductor now earns from 70 to 80 cents per hour; the Scranton division conductor, from 52 to 60 cents.

Enough has been said to prove that standardization of the rate per mile has not only not eliminated discrimination but has actually created new inequalities. The cases mentioned are sufficient to indicate their nature and seriousness.

We shall now consider briefly the effect which the arbitration proceedings and the extensive wage increases have had and may yet have on the relations between the railroad companies and the employees in train service.

With the beginning of the year 1910, railroad managers were confronted with the problem of raising freight rates as well as with the necessity of paying higher wages. If the situation had not been complicated by the freight rate question, it is probable that the railroads would have offered a more determined resistance to the demands of the employees and might have prevented some of the unreasonably high wage rates which are causing such a heavy increase in operating expenses. But when the negotiations reached a point where it plainly meant arbitration or strike, the railroads chose the more peaceful alternative. A strike, undoubtedly, would have added to the popular distrust of railroads and placed greater difficulties in the way of a satisfactory adjustment of the freight

rate situation. Possibly, too, the personnel of the arbitration boards may have suggested that if Federal instrumentality were responsible for materially increasing the cost of railroad operation by awarding higher wages, then Federal approval might not be withheld when the rate increases came up for review. The Baltimore & Ohio award was framed by Chairman Knapp of the Interstate Commerce Commission and Commissioner Neill of the Bureau of Labor; on the New York Central arbitration board, the senior member was Commissioner Clark of the Interstate Commerce Commission. It remains to be seen how much weight will be given by the Commission to the relation of railroad wages to freight rates but there is an impression in railroad circles that since the awards in the wage disputes have, in a sense, the stamp of governmental approval, it would be inconsistent on one hand to force upon the railroads a wage scale higher than they could afford to give voluntarily and on the other hand deny the railroads the one ready means of meeting the increased expense.

Confirming this impression, the committeemen representing the employees frequently expressed the opinion, while arbitration was in progress, that the increase in the pay roll expense would be more than made up by the greater revenue from the advanced freight rates. From the frequency and apparent sincerity of the statement, the conclusion is natural that it was inspired by the grand officers of the organizations. If this opinion is correct, then they too felt that there would be no hitch in the freight rate program. But the injunction restraining the western roads from increasing their rates, the subsequent agreement between President Taft and the railroads under which the tariffs were withdrawn, and the pas-

sage of the amended Interstate Commerce law, have made it impossible, as yet, for the railroads to recoup themselves in the manner intended. The disappointment of the railroads on account of the setback to the plan for advancing the rates has had the effect of aligning the railroads workers on the side of the companies in deprecating the policy of the administration and the Interstate Commerce Commission. As an illustration of the force of this sentiment, the organizations arranged a mass meeting in New York, September 24th, which was attended by upwards of 3000 railroad men, and in which resolutions were adopted pledging their

"collective and individual efforts against those who are selfishly and otherwise antagonistic to the interests from which we derive our livelihood" and "earnestly requesting the Interstate Commerce Commission to consider the proposed increases in the transportation rates of our employers in a broad-minded manner, and from the standpoint of their general knowledge of railway conditions as they exist; that technicalities and impractical theories should not be allowed to over-ride well known facts; and that such disposition may be made of the matter as will foster and encourage the efficiency of the service, the welfare of the rank and file and maintenance of standards best calculated to enhance the development of the properties."

The Interstate Commerce Commission, Congressmen, and Senators have been deluged with petitions from railroad employees praying that the railroads be given some relief from further regulation and restriction and allowed to advance their freight rates. The railroad brotherhoods, as such, rarely permit themselves to be drawn into any action which has a political aspect; but in the effort to induce the Interstate Commerce Commission to give favorable consideration to the freight rate increases, the brotherhoods and their individual members have been active allies of their employers. This alliance is justified by the organiza-

tion leaders on two grounds; first, because the prosperity of railroad workers depends primarily on the prosperity of the railroads and the further prosperity of the railroads demands a greater revenue per unit of service rendered; and, second, since generous wage increases were granted either by arbitration proceedings or voluntarily, and on the assumption that it would be possible to advance freight rates at once, the organizations, to show good faith, should do all in their power to influence the Interstate Commerce Commission to act favorably.

Looking at the situation from another viewpoint, the normal gap between the railroad management and their men has been widened by the results of recent arbitration. Heretofore, except in a few cases, the renewal of wage agreements has been a matter of adjustment between the managements and local committees representing the men, in which mutual concessions were common. The greater proportion of the settlements were effected without recourse on the part of employees to the grand officers of their brotherhoods. Only in rare cases has it been necessary to invoke the aid of outside influence or to submit the differences to arbitration. It is too much to hope that this policy of local adjustment will be the rule hereafter. The success of the standardization movement, engineered entirely by the national leaders of the organization, undoubtedly marks the passing of the local committee as a power in settling wage rates. It is reasonable to prophesy that nearly all future negotiations of this character will be conducted by the grand officers of the brotherhoods or their deputies. The outlook in this respect naturally is distasteful to the railroad official, who resents outside interference, and who conscientiously feels that the best

interests of the road and its men lie in handling such matters locally between the company and its men as employees, not as labor unions. On some of the eastern roads, it had never been necessary to call in a union official. But in the light of precedents established this year, and the success of the organizations, railroads managers are facing changed conditions which are forcing the personal element in the relations with employees to the background.

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NOTES AND MEMORANDA

THE DUN-GIBSON INDEX NUMBER

In the August issue of this JOURNAL, Professor J. Pease Norton called attention to "a revised index number for measuring the rise in prices" which Thomas Gibson has recently begun to publish in continuation of the suspended Dun Index. A critical examination of the merits of this new series may be serviceable to economists.

I

"For a great many years," as Professor Norton says, "the Dun index numbers had the approval of the business world." What is more surprising, they won the sanction of the Treasury Bureau of Statistics, and for some time were regularly re-published in its official documents, including the Statistical Abstract of the United States.

Whether they merited this popular approval and this official recognition is highly questionable. No one knows what value to set upon the Dun series, for the simple reason that the compiler never disclosed what data he used. Dun's Review stated regularly that 350 commodities were included, and that the price of each was "multiplied by the quantity annually consumed by each inhabitant, as nearly as may be ascertained by statistical records." But, for lack of space, the Review never printed the list of articles, never stated the sources from which quotations were taken, and never explained how "the quantity annually consumed by each inhabitant" was estimated. Hence the results had to be accepted on faith. Their vogue was due to "prestige value."

But no mystery veiled the distinguishing feature of the Dun series. Unlike most other index numbers, it was not

an average of relative prices, but a sum of actual prices in dollars and cents. It professed to show "the cost of a year's supplies of all the necessities of life" for a single person.¹ Dun's Review soberly explained that, "While these figures can not be considered exact, the approximation is sufficiently close to attain the desired result, and the ratio being constant the comparison with different dates shows to a cent the rise or fall in cost of living."²

This pretence of showing accurately changes in cost of living was a curious blunder; for the quotations used in constructing Dun's series were taken from wholesale markets. That changes in prices at wholesale differ materially from changes in prices at retail is well known. The best available evidence concerning the nature and degree of this difference is given by a table showing the average relative prices of the 25 foods for which the Bureau of Labor publishes both wholesale and retail quotations.³ According to this table, changes in wholesale prices usually indicate

TABLE I

RELATIVE PRICES OF 25 FOODS AT WHOLESALE AND RETAIL
Arithmetic Means. Average prices 1890-99 = 100

	At Wholesale	At Retail		At Wholesale	At Retail
1890	109	102	1899	96	99
1891	113	104	1900	101	101
1892	105	102	1901	104	105
1893	115	105	1902	113	110
1894	103	100	1903	107	110
1895	96	98	1904	106	110
1896	84	95	1905	107	111
1897	86	96	1906	113	114
1898	93	98	1907	117	119

¹ Hence the practice of multiplying the price of each article by the consumption per capita.

² Dun's Review, September 7, 1901. Quoted in Bulletin of the Department of Labor, March, 1902, p. 211. *Italics mine.* "The ratio being constant," probably refers to the system of weighting which is explained below.

³ The commodities included are: apples-evaporated; beans; beef-fresh; beef-salt; bread-wheat; butter; cheese; coffee; corn meal; eggs; fish-salt; flour-wheat; lard; milk; molasses; mutton; pork-bacon; pork-dry or pickled; pork-ham; pota-

the *direction* in which retail prices are moving. But they cannot be trusted even so far, since the fluctuations of 1902-04 present an exception to the rule. As an index of *degree of change* in cost of living, on the contrary, the wholesale figures are altogether untrustworthy. The average variation from one year to the next is more than twice as great for the wholesale series in the table as for the retail series — 5.9 points against 2.4. It follows that the Dun index number is not what it purports to be — an accurate measure of changes in cost of living.

Whatever merits the Dun series possesses, then, must be merits as an index of changes in wholesale prices. But if so much be granted, the advantages of Dun's system of weighting are open to question. The weights employed are food 50%, clothing 18%, and minerals and miscellaneous goods each 16%. Professor Norton regards this scheme of weights as worthy of continuation, because American families with incomes of less than \$700 have been found to make 47% of their expenditure upon food, 14% upon clothing, and 39% upon other things. No doubt, weights derived from family budgets are the best for use in tables of retail prices which show changes in cost of living. But it does not follow that proportions of family expenditure are the best gauge of the relative importance of commodities in wholesale trade. Indeed, there is a measure of absurdity in applying such weights to groups of commodities like pig iron, lime, fertilizers, lead, hides, and brick, which do not enter into family budgets.¹ Consumers' goods made from these materials might logically be weighed in this manner; but not the materials themselves.

toes; prunes; rice; sugar; tea; vinegar. To make the comparison as fair as possible, I have used the retail prices for the North Atlantic States when the wholesale market is New York, and for the North Central States when the wholesale market is Chicago.

The Bureau of Labor's comparison between the relative prices of 30 foods at retail and 54 foods at wholesale is less trustworthy than the present table. Nevertheless it yields substantially similar results. See Bulletin of the Bureau of Labor, July, 1908, pp. 196-7.

¹ These articles are among the few definitely known to be included in Dun's list. See Statistical Abstract of the United States, 1907, p. 569, note.

As the vogue of the Dun Index grew, the compiler became more ambitious and began to extend his figures backward, until finally he made an unbroken series for every year since 1860. Any one who has dealt with American price quotations must wonder enviously where this bold statistician found trustworthy records of prices and consumption for his 350 commodities over this long period of time. If he really had the data, he wronged all students of the subject by not publishing them, or at least indicating his sources. If, on the other hand, he was forced by scantiness of quotations to work with fewer commodities, or to make substitutions as he went further back, then he tacitly compromised the integrity of his series. Not until the substantial continuity of the quotations used has been guaranteed by a frank statement can confidence be felt in the comparability of the figures for different years and decades.

At best, then, Dun's index number shows the fluctuations in wholesale prices of an unknown and presumably changing list of commodities, weighted by *per capita* consumption, ascertained no one knows how. Whether it was worth while to attempt a continuation of this dubious series after Dun's Review dropped it is doubtful. For, however perfect the continuation, comparisons between the new figures and the old must always be attended by the uncertainty which clouds the title of the latter.

II

But is the Gibson Index really a continuation of the Dun series?

Two important changes have been made in the method of computation. First, the number of commodities included has been reduced from 350 to 50, and the latter list has been published. Second, the character of the series has been changed from a sum of wholesale prices of a year's supplies of necessities for one person in dollars and cents to an average of relative prices. These relative prices are taken ready-made from the Bureau of Labor and are based

upon average actual prices in the decade 1890-99. To graft these relative prices upon the Dun series, it was necessary to multiply them by 0.843. This figure represents the average of the Dun numbers for 1890-99, corresponding to an average of 1.000 for the same period in the series borrowed from the Bureau of Labor.¹

Aside from this multiplication by 0.843, Professor Norton's case for treating the new average of 50 relative prices as a continuation of the old sum of 350 actual prices rests upon the use of what he treats as identical weights. Dun's plan of multiplying the price of each commodity by its *per capita* consumption is given up, and the pretence that the results measure changes in cost of living is all but dropped. The continuity of weights consists simply in making the group of foods as a whole count for 50% of the total, and the groups of textiles, minerals, and miscellaneous articles count for 18%, 16%, and 16% respectively. To show that this method of manipulating relative prices drawn from the Bureau of Labor does actually produce results nearly identical with Dun's index number, Professor Norton compares the new Gibson and the old Dun figures for four dates, the year 1896, and the months January, February, and March, 1907 — and finds that the average differences do not exceed one point.

Such close agreement is surprising. For past experience in dealing with index numbers has established the belief that systems of weighting exercise less influence upon the results than the number and character of the series to which the weights are applied.² That a partial similarity of weights should have power to make an average of 50 relative prices come out as a rule within one point of a sum of 350 actual prices seems improbable. I have, therefore, computed the Gibson index number on the plan explained by

¹ Of course this short method of transposing relative prices to a new basis does not yield strictly accurate results. But to recompute the relative prices of 50 commodities on the basis, average actual prices in 1890-99 = 84.3, would have involved greater expense.

² Compare A. L. Bowley, *Elements of Statistics*, 2d edition, p. 234.

Professor Norton for all the years covered both by the Bureau of Labor data and by Dun's series. Table II presents the results.¹

TABLE II
COMPARISON BETWEEN THE GIBSON AND DUN INDEX NUMBERS
1890-1906

	Gibson	Dun	Difference
1890	96.0	91.6	+4.4
1891	96.9	96.1	+0.8
1892	89.1	90.0	-0.9
1893	89.2	90.6	-1.4
1894	79.4	83.3	-3.9
1895	78.8	81.5	-2.7
1896	72.3 ²	74.3	-2.0
1897	74.9	72.5	+2.4
1898	80.1	77.8	+2.3
1899	86.3	85.2	+1.1
1900	92.9	91.4	+1.5
1901	91.4	91.5	-0.1
1902	97.8	101.9	-4.1
1903	96.3	99.5	-3.2
1904	97.8	97.2	+0.6
1905	98.8	98.3	+0.5
1906	102.7	105.2	-2.5

In the 17 years covered by this table, Gibson's and Dun's index numbers disagree three times about the direction in which prices were trending. In 1896-97 the Gibson figures rise while the Dun figures fall; in 1900-01 the Gibson figures fall while the Dun figures rise; in 1903-04 the Gibson figures again rise while the Dun figures fall. The difference between the two series is less than one point in five years, between one and two points in three years, between two and three points in five years, between three and four points in two years, and over four points in two years. In eight

¹ To make sure that I was using the same series as Professor Norton, I checked my list by the relative prices for January, 1907, which he publishes. One discrepancy appeared. Professor Norton enters the relative price for "Wool, Ohio, fine fleeces" as 125.1; the Bulletin gives 127.1. But Professor Norton's footing for textiles indicates that the discrepancy is merely a misprint.

² My result for this year differs by 0.1 from Professor's Norton's — 72.2.

years the Gibson figures exceed the Dun, in nine years the Dun figures exceed the Gibson. One series makes 1896, the other 1897 the year of lowest prices. The sum of the differences is 34.4 points, a trifle more than two points on the average, or twice the difference found by Professor Norton.¹

Lest it be thought that an average difference of little more than two points between two series of index numbers justifies a statistician in regarding one series as a continuation of the other, I may point out that the Gibson Index differs less from two series with which it is supposed to be unrelated than from the series which it is supposed to continue. Both of these series come from the Bureau of Labor. Since the Gibson figures were shifted from the Bureau's basis of average actual prices in 1890-99 to the Dun basis through multiplication by 0.843, they can be shifted back again through division by that same number. Then comparison is feasible. One of the series in the next table shows the Bureau's own figures for "all commodities" — about 250 in number. The other is made from the Bureau's relative prices by using only the averages of groups of closely related goods — like different kinds of cotton sheetings, shingles, window glass, etc.² This improvement reduces the number of series entering into the grand average from 250 to 145.

¹ A minor cause of difference which Professor Norton does not mention, is that the Dun figures which he uses refer to prices on July 1st of each year, whereas the Gibson figures which he publishes as a continuation for 1907-09 represent average prices for every month in the year. I have had to follow his example in using annual averages in the comparison with Dun, since the Bureau of Labor has not published monthly relative prices by single commodities for years before 1902.

² The groups for which I have used averages are as follows: cattle, hogs, sheep, beef, bread, crackers, bread-loaf, butter, fish, flour-wheat, meal-corn, pork, sugar, blankets, boots and shoes, carpets, cotton flannels, cotton yarns, drillings, gingham, leather, overcoatings, sheetings, shirtings, silk, underwear, women's dress goods, worsted yarns, wool, coal-anthracite, coal-bituminous, petroleum-refined, bar iron, nails, pig iron, tools, builders' hardware, oak, pine-white, plate glass, shingles, window glass, earthen-ware, furniture, glassware, table cutlery, wooden ware, paper, tobacco.

The purpose is to get a simple arithmetic mean, which is the resultant of as many independent price-factors as possible. It might be desirable to go even further, and use but one average series each to represent all cotton and all woolen textiles. As the next table shows, the new figures are somewhat more sensitive than the old, but the differences are slight.

TABLE III
COMPARISON BETWEEN THE GIBSON AND THE BUREAU OF LABOR
INDEX NUMBERS

	Gibson -+ 0.843	Bureau of Labor		Differences	
		250 series	145 Series	250 series	145 series
1890	113.9	112.9	114.1	+1.0	-0.2
1891	114.9	111.7	112.7	+3.2	+2.2
1892	105.7	106.1	106.1	-0.4	-0.4
1893	105.8	105.6	105.0	+0.2	+0.8
1894	94.2	96.1	95.6	-1.9	-1.4
1895	93.5	93.6	92.8	-0.1	+0.7
1896	85.8	90.4	88.8	-4.6	-3.0
1897	88.8	89.7	88.7	-0.9	+0.1
1898	95.0	93.4	93.5	+1.6	+1.5
1899	102.4	101.7	102.5	+0.7	-0.1
1900	110.2	110.5	111.3	-0.3	-1.1
1901	108.4	108.5	109.6	-0.1	-1.2
1902	116.0	112.9	113.7	+3.1	+2.3
1903	114.2	113.6	113.8	+0.6	+0.4
1904	116.0	113.0	113.9	+3.0	+2.1
1905	117.2	115.9	115.8	+1.3	+1.4
1906	121.8	122.5	122.3	-0.7	-0.5

The differences shown by this table between the Gibson and Bureau of Labor figures are distinctly smaller than those shown by Table II between the Gibson and Dun figures. The sums of the differences are 23.7 points for the Bureau's own series, and 19.4 points for the revised series. The latter sum is not much more than half of the 34.4 points by which Gibson's Index differs from Dun's.¹

Comparison may be made also with Bradstreet's Index. This series is described as showing "the totals of the prices per pound of 96 articles," on the first day of each quarter from 1892 to 1898, and on the first day of each month from 1899 to date. The averages by years for 1892 to 1906, as computed by the compilers, are shown in the first column of the next table.² A process analogous to that applied

¹ Had the transposing been done by reducing the Bureau of Labor series to the lower level of the Gibson series, instead raising the latter to the higher level of the Bureau's series, the differences would have been smaller still.

² Bradstreets, Aug. 12, 1910, p. 536.

by Professor Norton in shifting the Bureau of Labor series to Dun's basis for 1890-99, may be applied in shifting the Bradstreet series approximately to Gibson's basis for 1892-99. The sum of the figures for 1892-99 is 650.1 in Gibson's Index, and 54.23 in Bradstreet's. The first sum divided by the second gives 11.987. The second column of the table shows Bradstreet's series multiplied by that number. The last two columns show how much both these revised Bradstreet and the Dun figures differ from the Gibson figures. It turns out once more that the new series agrees better with a supposedly unrelated index number than with that which it purports to continue.

TABLE IV
COMPARISON BETWEEN THE GIBSON AND THE BRADSTREET
INDEX NUMBERS

1892-1906

	Bradstreet's Index Number		Gibson's Index Number	Differences between Gibson's Index and	
	Original	Multiplied by 11.987		Bradstreet's × 11.987	Dun's
1892	7.78	93.3	89.1	-4.2	-0.9
1893	7.53	90.3	89.2	-1.1	-1.4
1894	6.68	80.1	79.4	-0.7	-3.9
1895	6.43	77.1	78.8	+1.7	-2.7
1896	5.91	70.8	72.3	+1.5	-2.0
1897	6.12	73.4	74.9	+1.5	+2.4
1898	6.57	78.8	80.1	+1.3	+2.3
1899	7.21	86.4	86.3	-0.1	+1.1
1900	7.88	94.5	92.9	-1.6	+1.5
1901	7.57	90.7	91.4	+0.7	-0.1
1902	7.88	94.5	97.8	+3.3	-4.1
1903	7.94	95.2	96.3	+1.1	-3.2
1904	7.92	94.9	97.8	+2.9	+0.6
1905	8.10	97.1	98.8	+1.7	+0.5
1906	8.42	100.9	102.7	+1.8	-2.5
Sums of the differences				25.2	29.2

As has been said, experience did not justify the man who planned Gibson's Index in thinking that a partial identity of weights would suffice to weld it smoothly to Dun's.

But his ill fortune passes expectation. Not knowing what commodities entered into the old series, he took long chances, and they have turned against him. Certainly no one could have foreseen that three other series taken at random, with widely varying lists of commodities and widely varying weights, would each happen to agree better than Dun's with the new series.

Gibson's Index, then, is not a legitimate heir of Dun's. But the fact that it comes fairly close to the latter and closer still to three other series, affords welcome evidence of the reliability of the common method of measuring changes in prices. Five index numbers, made from quotations for 350, 50, 250, 145, and 96 commodities respectively, all yield much the same results. Confidence in the representative character of each series is confirmed by the substantial agreement of the others.

III

The unsuccessful as a continuation of Dun's series, the Gibson Index deserves to be judged upon its own merits.

Its chief defect is obscurity of meaning. A technical description would run as follows: an arithmetic mean of the relative prices of 50 staple commodities at wholesale, computed on the basis of average actual prices in 1890-99, multiplied by 0.843, and classified in four groups, each weighted according to a scheme borrowed from Dun's index number, and justified by family expenditures at retail prices as shown by a collection of working-men's budgets. It is not easy to interpret such figures.

Clearly the Gibson Publishing Company would enhance the value of their index number by simplifying its character. If they dropped the vain pretence of continuing Dun's series, they would get rid both of the cumbrous method of computation and the obscurity of meaning which the effort at continuation involves. Then they might strike a simple arithmetic mean of relative prices which would be in-

telligible. This plan would make the 22 foods count as 44% of the 50 commodities, the 9 textiles and 9 minerals as 18% each, and the 10 miscellaneous goods as 20%. The results computed in this fashion run as follows.

TABLE V

THE IMPROVED GIBSON INDEX NUMBER, BY YEARS, 1890-1909
Arithmetic Means, Average Actual Prices, 1890-99 = 100

1890 . . . 114.0	1900 . . . 111.6
1891 . . . 113.9	1901 . . . 109.2
1892 . . . 105.1	1902 . . . 116.2
1893 . . . 105.2	1903 . . . 115.3
1894 . . . 93.9	1904 . . . 116.3
1895 . . . 93.9	1905 . . . 117.9
1896 . . . 86.6	1906 . . . 123.4
1897 . . . 89.2	1907 . . . 131.6
1898 . . . 95.0	1908 . . . 125.0
1899 . . . 103.4	1909 . . . 132.1

Such simplification is all that is needed to make the Gibson index number a model of its kind. For, as Professor Norton says, its composition "in the light of the statistical quality and importance of the articles, is excellent." But its chief advantage over rivals is the weekly publication which is promised. After such a weekly series had been maintained several years, it would afford a better basis than the monthly tables for investigating the relations between changes in prices of commodities at wholesale on the one hand, and changes in prices of stocks, rates of interest, activity of business, etc., on the other hand.

But useful as the Gibson Index might prove, neither it, nor any other single series can justly claim to be a satisfactory measure of the rise and fall of prices. For the kind of index number wanted must always depend upon the end in view. The very features which make a series admirable for one purpose may disqualify it for another. Already the purposes for which economists use index numbers are many, and doubtless they will multiply in the future. Hence the great value of the plan which Colonel Wright adopted

in the Bureau of Labor — that of recording the actual and relative prices of a long list of commodities, from which investigators may make such selections and combinations as their ends require.

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THE SOMERS SYSTEM OF REALTY VALUATION

THE quadrennial ¹ revaluation of real estate for taxation, which has been in progress in Ohio during the present year, has revived the old problems relative to proper methods of taxation, and has given rise to new ones. The pressure of the present burden of taxation ² has led to a general demand for reforms in the existing system of valuation, under which gross inequalities have entered into the assessment of real estate, both as between different localities and as between different parcels of real estate in the same locality.³ The popular demand everywhere has been for an enforcement of the constitutional and legal provisions requiring all property to be assessed at its fair cash value. Appraisal Boards throughout the state have been stimulated by this public outcry to greater efforts in the pursuit of their duties, and in the use of new methods of determining true valuations. One of the most elaborate of these methods is that which has been adopted in Cleveland, Ohio, the "Somers System of Realty Valuation."⁴ Its essential features will here be described briefly.

¹ Formerly decennial. Beginning with 1910, the appraisement is to be quadrennial. See Acts of the Ohio Legislature, Session of 1909, p. 81.

² The Cleveland tax rate in 1909 was \$3.37 per \$100.

³ See Report of the Ohio Tax Commission, 1908.

⁴ So-called from its inventor, Mr. W. A. Somers, of St. Paul, Minn. The system is the product of many years of experience in assessors' offices and of considerable study of the whole subject of real estate values. It has been used successfully in St. Paul and in Ramsey County, Minn, for both city and rural valuations, and has been installed in Columbus, Ohio, for the present appraisement of real estate. Parts of the system were used, under Mr. Somers' direction, by the New York Appraisal Board of 1909, but the fundamental features of the plan were not there employed.

The Somers system is based upon the principle that city real estate values are community values. Land is worth whatever the community thinks it is worth, barring the exceptional cases in which individuals may place unusual values upon particular sites for special purposes. One of the most prolific sources of inequality and disaffection in the assessment of real estate hitherto has been the failure to recognize this truth, and the persistent substitution of the shifting and arbitrary judgment of a Board of Assessors for the census of public opinion. The problem of proper valuation consists in approximating as closely as possible to the values which the community places upon its land.

In order to reach this approximation, units and factors must be used in the terms of which the community most generally thinks and deals, and by means of which it is most capable of forming correct judgments of values. To value individual city lots by this method is obviously out of the question, since it would be impossible to obtain a consensus of public opinion, sufficiently broad to be representative, regarding the value of each lot in the city. Individual lot values must be calculated, according to rules formulated by experience, from such units as to the value of which intelligent and representative public opinion does exist.

The best basis for the expression of "community opinion" regarding land values is thought to be the streets of the city, or more properly, a definite and uniform unit of land on each street. To quote Mr. Somers — "There always exists in cities a Community Opinion that a certain street is the best for business, and a consequent idea that land fronting thereon is the most valuable. From this most valuable street other streets of less value will be compared, a well-defined opinion being present that the property on the less valuable street is less valuable just in proportion as the street is less valuable, and the comparison will reach out from the centre or best portion and embrace the entire city. . . .

"To make use of this Community Opinion of the relative

worth of the streets, it is necessary to find some common term that can be used to express their comparative value as a unit in all parts of the city. The value of one foot in width for some fixed depth is the best measure for the purpose, because of its common use and its applicability both to gauge comparative value of streets and real value of tracts."¹

The Somers unit is a strip of land one foot wide and one hundred feet deep, free from corner influence, *i. e.* uninfluenced by the higher values due to the proximity to a corner. Once the community has agreed upon the value of this unit for each street, the valuation of individual lots becomes simply a matter of the application, by a clerical force, of certain fixed rules of experience which have been developed by the inventor.

The valuation of the units is arrived at in the following manner. The City Appraisal Board of Cleveland estimates tentatively the unit values of the various streets, beginning at the Public Square and working out in every direction to the corporation limits.² By means of maps and a campaign of publicity in the city newspapers, these tentative valuations are scattered broadcast, and the community is invited to discuss them. At a series of public meetings of the Board, section after section of the city is covered, many parts being gone over several times, until all interested persons are given ample opportunity to appear before the Board and submit evidence in favor of changing the tentative unit values. After being thoroly debated by the public in this manner, the unit values finally agreed to by the majority are regarded as representing the consensus of opinion. These unit values are confirmed by the Board, and are not open to further discussion.

¹ *The Valuation of Real Estate for the Purpose of Taxation*, by W. A. Somers, St. Paul, Minn., 1901, p. 19.

² The Board adopted the rule that property should be valued on the basis of the best use of it, *i. e.* a lot in the business section which was being used for residence purposes should be valued as business property. The owner, and not the public, should bear the loss if the property were put to any other than its best use. Another rule followed was that thoroughfares, which were defined as the main channels of trade and travel, should be valued uniformly higher than the minor streets.

With these unit values agreed upon, the next step is the valuation of individual lots. Numerous devices and rules of experience have been prepared by the inventor to facilitate this work, which is done by clerks who never see the lots they are valuing. The most important of these aids are the following.

(1) The curve of values: a scale showing the percentage of the unit value for a one-foot strip of any depth. It is made necessary by the fact that lots are of varying depths. The following selected figures show how the percentage of the unit value is used for lots from 1 foot to 700 feet deep.

TABLE I

CURVE OF VALUE¹

(Arranged and Printed for the City of Cleveland)

Depth of Lot	Percent of unit value	Depth of Lot	Percent of unit value
1	3.10	80	90.90
10	25.00	90	95.60
20	41.00	100	100.00
30	54.00	150	115.00
40	64.00	200	122.00
50	72.50	250	126.05
60	79.50	500	137.85
70	85.60	700	142.35

(2) Another problem calling for the application of special devices is the valuation of corner lots,² deriving their advantages from the fact of frontage on two streets, and more valuable than ordinary lots of the same size. The amount by which the corner lot is more valuable depends on the unit values of the intersecting streets. The minimum excess over an ordinary lot will occur if one street is a *cul de sac* giving access simply to light and air and allowing

¹ In the full table as officially printed a percentage is given for each foot of depth from 1 to 700. The figures here reproduced suffice to indicate the nature of the progression.

² Corner influence is not calculated in Cleveland if the combined unit values do not exceed \$100. This excludes much of the residence territory.

display windows, but with no assigned unit value. The maximum excess of value over an inside lot of equal size will be created by units of equal value on the intersecting streets. The influence of the corner is assumed to extend 100 feet in each direction from the corner, and the relative excess must be spread equitably over this area of 100 by 100 feet. For the purpose of doing this, the zone of corner influence is divided into 100 squares, each 10 by 10 feet. These squares are numbered, always in the same manner with reference to the better street, and the value of each square has been calculated for a series of combinations of intersecting unit values, by assuming the unit value on one street as constant at \$1,000, and varying the other unit value, by \$10 intervals, from \$10 to \$1,000. Unit values above \$1,000 are always regarded as multiples of \$1,000; thus, unit values of \$9,000 and \$4,500 are reduced to \$1,000 and \$500, etc.

In the actual process of valuing individual lots the clerks are provided with printed slips bearing the numbered squares, and a set of the tables giving the values of the squares under all the above conditions of varying unit values.¹ A lot of any size is easily valued by marking off on a slip the squares which lie within it, and adding the values of these squares. The following table reproduces the squares as they are numbered, and also includes the value in dollars of each square when the unit values on the intersecting streets are \$1,000 and \$250 respectively.

¹ Instead of the printed slips, transparent scales having the squares laid off as on the slips, are often used. By laying one of these scales over a blue print of the block, the squares included within each lot can be written down at once.

TABLE II

Street Unit Value \$250.	10	20	30	40	50	60	70	80	90	100
	\$899	\$715	\$624	\$568	\$520	\$498	\$485	\$453	\$444	\$440
	9	19	29	39	49	59	69	79	89	99
	954	773	679	619	572	538	514	493	476	470
	8	18	28	38	48	58	68	78	88	98
	1037	849	756	691	641	607	571	548	538	531
	7	17	27	37	47	57	67	77	87	97
	1127	933	835	781	719	663	644	624	614	612
	6	16	26	36	46	56	66	76	86	96
	1240	1032	918	875	809	748	734	714	704	702
Corner	5	15	25	35	45	55	65	75	85	95
	1433	1137	1020	965	904	893	872	854	852	852
	4	14	24	34	44	54	64	74	84	94
	1613	1303	1167	1110	1033	1066	1044	1016	1008	1001
	3	13	23	33	43	53	63	73	83	93
	1840	1538	1403	1370	1353	1345	1334	1318	1306	1302
	2	12	22	32	42	52	62	72	82	92
	2125	1838	1757	1701	1671	1664	1647	1625	1612	1604
	1	11	21	31	41	51	61	71	81	91
	2803	2683	2645	2619	2594	2579	2563	2536	2517	2506
Street Unit Value \$1000.										

The heavy lines drawn on the lower left side of this diagram represent, for example, an irregular lot, with 93 feet on the better street, 40 feet on the side street and a minimum depth of 60 feet from the side street. The clerks are provided with blue prints of each city block, on which are given contours of every lot, regular or irregular. The fractional parts of the square are estimated by the clerk, who checks up his estimates by totalling the lots and parts of lots which fall within the large square, and comparing this total with the value of the latter, taken as a whole. The two totals must be the same. A lot situated to the right of the one outlined, and extending outside the area of corner influence, would be valued by using the curve of value for that part which lies outside the zone of corner influence and the corner squares for that part which is included within it.

(3) **Overlap.** — Frequently it happens, in case a street with a high unit value is intersected by one with a much lower unit value, that the value of the inside lots fronting on the side street must be increased because of the proximity of the higher valuation. The following illustration shows the method of calculating this overlap;

TABLE III

		200	250	300	350	400	
Street Unit Value \$500	50 ft.	30	80	180	180	180	
		220	220	220	220	220	
		15	65	115	165		
		235	235	235	235	235	
		35	85	85	135		
		265	265	265	265		
		305	305	305	305	305	
		45	95				
		350	350	350	350	350	
		425	425	425	425	425	
Lot B							
100 ft.							
Zone of Corner Influence							
Lot A							
100 ft.							
Street Unit Value \$1000							

In this case, the use of the curve of value (as illustrated in Table I) would indicate that the squares in the eleventh tier, counting back from the better street, were worth \$400 each, those in the twelfth tier \$350 each, etc. But from the side street, the squares in the tenth tier would be worth only \$220 each, those in the ninth tier \$235 each, etc. In every case in which the value of a square would be greater from the better street than from the side street, enough must be added to the lesser valuation to make it equal to the greater. The total value of lot B is then found as follows:—

50 feet frontage, at \$500 per foot	\$25,000
Total overlap (sum of excess in all of the squares affected)	1,225
	<hr/>
Total value of Lot B	\$26,225

Similarly, if a lot were being valued from the better street, the \$200 square would be subject to an overlap of \$20, due to the greater influence at that point, of the unit value on the side street.

(4) The land occupied by an alley is valued at the same figure as the lots fronting on the streets to which the alley gives egress. The total value of the strip occupied by the alley is spread over the lots which abut on the alley, in proportion to the alley frontage of each. The argument for this is that the abutting lots have the advantage of light and accessibility given by the passageway and should properly be assessed with the value of the land so used.

(5) Buildings are valued separately, as is required by the Ohio law. The first step in this process is to take a census of all the buildings of every kind in the city. Forms have been prepared upon which a description of a building can be quickly entered by checking off the proper items in a long list, which covers such points as the kind of materials, the finish and equipment, dimensions, age, condition, rental, and the like. The forms are of four general types, appropriate for the description of the following classes of buildings:—

1. Single house; one side of double house; one of row; duplex.
2. Flats for families; tenements; apartments.
3. Warehouse; factory; mill; foundry; garage; stable; shed.
4. Store building; office; hotel; theatre; bank; church; hall.

This grouping is elastic enough to include buildings not specifically mentioned. The total number of buildings counted and valued was 96,431.

The basis of building valuation is the square foot of superficial area. A schedule of values per square foot has been arranged for each of the four general types of structure above mentioned. In each schedule the gradations of height, of materials, of style and quality of construction, of finishing and plumbing, are taken account of, by a rising scale of values per square foot. An inspection of the field report on each building enables the appraiser to classify the structure properly, and to determine from the schedule the valuation per square foot.

This square foot valuation is subject to deductions according to the age and condition of the building. A scale of depreciation has been prepared to meet the building conditions in Cleveland.¹ The scale gives weight to the following factors: materials, whether wood or brick; condition of repair, whether good, fair, or bad. The deduction from the valuation per square foot on account of depreciation is tabulated for each year of age up to about sixty-five or seventy years, and for each of the above factors; also for each possible valuation per square foot by 10 cent intervals between \$1.00 and \$10.00 per square foot. The product of the present valuation per square foot and the superficial area of the house gives the present value of the structure. The results of this method have been very successfully checked by obtaining the estimates of real estate agents

¹ It was found that a scale of depreciation suitable for St. Paul, Minn. where most buildings are of recent construction, would not serve for Cleveland, where many old buildings are still in use and in good condition.

as to the value of the buildings on a certain street, and then determining their values independently by the rules as described. The two sets of valuations coincided so closely that the Board was much encouraged in the use of this method.

The real property of the railroads, which has hitherto been valued at much less than its true value, was assessed by the use of the unit system in the same way as other property. The unit value used was that given to the property adjoining the railroad real estate. In addition, for the purpose of determining the total valuation of the right of way, the railroads were weighted according to the density of traffic and the general importance of the particular road.

Vacant tracts in the outlying parts of the city were given a unit value per acre, which was again determined by community opinion.

Tho this scheme probably has some imperfections, it is undoubtedly the most scientific, elaborate, and systematic system of valuing real estate that has ever been used in the United States. There could be little objection to its theoretical basis, community opinion. Some doubt may exist as to the accuracy with which community opinion has been translated into actual values by the various tables and other devices of the present system. These must faithfully represent the best informed community opinion. Later and more extended researches may reveal necessary refinements and corrections of the calculations used at present. Until such improvements have been made, however, it will not be unprofitable to use the results thus far obtained for the valuation of real estate.

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BOOKS RECEIVED

- Baring, F. H. *Domesday Tables for the Counties of Surrey, Berkshire, Middlesex, Hertford, Buckingham and Bedford and for the New Forest.* London: St. Catherine Press. 1909. pp. 239. 7s. 6d.
- Besse, P. *La Crise et L'Évolution de L'Agriculture en Angleterre de 1875 à nos Jours.* Paris: F. Alcan. 1910. pp. 390. 10 fr. *Essai d'Histoire Économique.*
- Brace, H. H. *Gold Production and Future Prices.* New York: Bankers Publishing Co. 1910. \$1.45. (An Inquiry into the Increased Production of Gold and Other Causes of Price Changes with a View to Determining the Future of Prices.)
- Casson, T. N. *The History of the Telephone.* Chicago: A. C. McClurg Co. 1910. pp. 315. \$1.50.
- Clark, J. M. *Standards of Reasonableness in Local Freight Discriminations.* New York: Columbia University. 1910. pp. 155. \$.125. (Columbia University Studies, Vol. XXXVII, No. 1.)
- Coats, R. H. *Wholesale Prices in Canada, 1890-1909. Special Report.* Dominion of Canada—Department of Labour. Ottawa: Government Printing Bureau. 1910. pp. 509. 50 cents.
- Coker, F. W. *Organismic Theories of the State.* New York: Columbia University. *Nineteenth Century Interpretations of the State as Organism or as Person.* 1910. pp. 209. \$1.50. (Columbia University Studies, Vol. XXXVIII, No. 2.)
- Coman, Katherine. *The Industrial History of the United States.* New York: Macmillan. 1910. pp. 461. (New and Revised Edition.)
- Cox-Sinclair, E. S. and Hynes, T. *Land Values. The Taxation of Land Values under the Finance (1909-10) Act, 1910.* London: Charles Knight & Co. 1910. pp. 418. 10s.
- Davis, W. S. *The Influence of Wealth in Imperial Rome.* New York: Macmillan. 1910. pp. 340. \$2.00
- Eaves, Lucile. *A History of California Labor Legislation.* Berkeley: University of California. 1910. \$4.00. (With an introductory sketch of the San Francisco Labor Movement.)
- Field, A. S. *The Child Labor Policy of New Jersey.* Cambridge: American Economic Association. 1910. pp. 229. \$1.25.
- Frankel, L. K. and Dawson, M. M. *Workingmen's Insurance in Europe.* New York: Charities Publication Committee. 1910. pp. 477. \$2.50. (Russell Sage Foundation.)
- Gillette, K. C. *World Corporation.* Boston: New England News Co. 1910. pp. 240.
- Guyot, Y. *Socialistic Fallacies.* New York: Macmillan. 1910. pp. 343. \$1.50.
- Hilkey, C. G. *Legal Development in Colonial Massachusetts 1630-1686.* New York: Columbia University. 1910. pp. 148. \$1.25. (Columbia University Studies, Vol. XXXVII, No. 2.)
- Hill, R. T. *The Public Domain and Democracy.* New York: Columbia University. *A Study of Social Economic and Political Problems in the United States in Relation to Western Development.* 1910. pp. 240. \$2.00. (Columbia University Studies, Vol. XXXVIII, No. 1.)

- Howard, E. D. and Johnson, J. F. *Money and Banking*. New York: Alexander Hamilton Institute. 1910. pp. 495. (A discussion of money and credit, with descriptions of the world's leading banking systems. *Modern Business*, Vol. V.)
- Jefferson, H. McN. and Escher, F. *Banking Practice and Foreign Exchange*. New York: Alexander Hamilton Institute. 1910. pp. 407. (*Modern Business*, Vol. VI.)
- Johnston, H. H. *The Negro in the New World*. New York: Macmillan. 1910. pp. 499. \$6.00.
- Lescohier, D. D. *The Knights of St. Crispin 1867-1874. A Study in the Industrial Causes of Trade Unionism*. Madison: University of Wisconsin. 1910. pp. 101. 40 cents.
- Lingley, C. R. *The Transition in Virginia from Colony to Commonwealth*. New York: Columbia University. 1910. pp. 218. (*Columbia University Studies*, Vol. XXXVI, No. 2.)
- Loubet, E. et Autres. *La Politique budgétaire en Europe*. Paris: F. Alcan. 1910. pp. 316. 3 fr. 50. (Les Tendances actuelles. Allemagne, France, Grande-Bretagne, Empire Ottoman, Russie.)
- McPherson, L. G. *Transportation in Europe*. New York: Henry Holt. 1910. pp. 285. \$1.50.
- Murray, W. S. *The Making of the Balkan States*. New York: Columbia University. 1910. pp. 199. \$1.50. (*Columbia University Studies*, Vol. XXXIX, No. 1.)
- New York State Education Department. *Review of Legislation 1907-8. Legislation 39*. Albany: University of the State of New York. 1910. pp. 475.
- Nogaro, B. and Moye, M. *Les Régimes Douaniers (Législation douanière et Traités de Commerce)*. Paris: A. Colin. 1910. pp. 320. 3 fr. 50.
- Ostrogorski, M. *Democracy and the Party System in the United States*. New York: Macmillan. 1910. pp. 469. \$1.75. (A study in extra-constitutional government.)
- Rasch, A. *Das Eibenstocker Stickereigewerbe unter der Einwirkung der Mode*. Tübingen: H. Laupp. 1910. pp. 166. M. 4.
- Rignano, E. *Le Socialisme*. Bologna: N. Zanichelli. 1910. pp. 27. (Estratto da "Scientia" Rivista di Scienza, Vol. VIII, Anno IV, No. XVI-4.)
- Snowden, J. H. *The World a Spiritual System*. New York: Macmillan. 1910. pp. 316. \$1.50. (An outline of metaphysics.)
- Spedden, E. R. *The Trade Union Label*. Baltimore: Johns Hopkins Press. 1910. pp. 100. (*John Hopkins University Studies*, Series XXVIII, No. 2.)
- Supino, C. *Il Mercato Monetario Internazionale*. Milano: Ulrico Hoepli. 1910. pp. 363. 6l.
- Swanson, W. W. *The Establishment of the National Banking System*. Kingston: The Jackson Press. 1910. pp. 117.
- Tanasig, F. W. *The Tariff History of the United States*. New York: Putnam's. 1910. \$1.50. (Fifth Edition, Revised.)
- Unsigned. *The Minority Report. A Criticism*. London: P. S. King. 1910. pp. 32. 6d. (A Summary which appeared in the "Times" of 19th June, 1910.)
- Vouters, H. *Le Petit Commerce contre les Grands Magasins et les Coopératives de Consommation*. Paris: A. Rousseau. 1910. pp. 205.
- Wilcox, D. F. *Great Cities in America. Their Problems and their Government*. New York: Macmillan. 1910. pp. 426. \$1.25.

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RAILWAY SPECULATION

SUMMARY

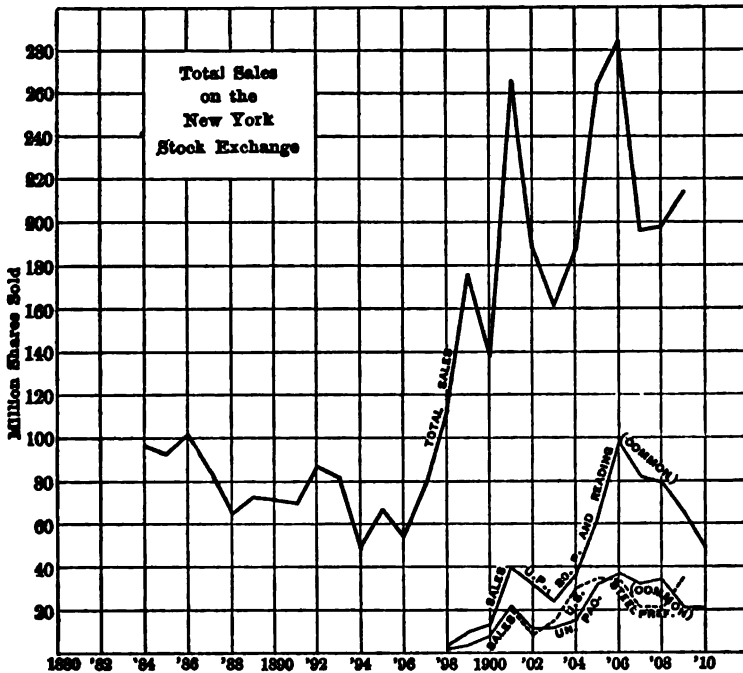
The course of speculative activity since 1890, 186. — Movement of particular issues, 187. — Speculative activity of railway bonds, 189. — Pooling contracts, 194. — Speculation by "insiders", 195. — Abrupt changes of dividend, 197. — Secrecy in accounting, 198. — The Cincinnati, Hamilton and Dayton, 201. — Speculation by outsiders, 204. — The Southern Pacific pool of 1902, 204. — The Louisville and Nashville pool of 1903, 206. — The Reading and Boston and Maine episode of 1893, 208. — The Pearson-Farquhar syndicate, 1910, 209. — Publicity as a remedy, 210. — Regulation of capital issues, 212. — Taxation of transfers, 213. — The outlook for the future, 214.

It is inevitable that in a relatively new and rapidly growing country, like the United States, speculation in railroads, as the chief agency in its industrial advancement, should be more common than in Europe. Risks must be run by hardy pioneers; and the rewards and losses attendant upon success or failure must be correspondingly large. Yet one might properly anticipate that with the passing of the pioneer stage a more settled order of business might ensue. It is a striking fact that this is not so. At no time in our history have stock-exchange operations in railroad shares been carried on both absolutely and relatively upon any such scale of magnitude as during

the decade to 1910. This is perhaps the more remarkable in view of the coincidently great development and activity of speculation in the shares of the great industrial combinations. Speculation has not been continuously rampant of course. Periods of intense dullness have often prevailed. But such wild outbreaks of general public interest as occurred in April, 1901, January, 1903, October-November, 1904, November-December, 1905, and August, 1906, are certainly unprecedented in our history. And that organized manipulation by powerful groups of railway capitalists has been a potent factor in this field is beyond dispute. Of course the kaleidoscopic changes of the railroad map due to rearrangement of the great transportation systems have centered much of this activity upon certain companies; but all alike have been affected to a certain degree. Happily there are indications that with the probable settlement of many of the larger problems in consolidation, and with the passing of some of the more daring leaders, this period may now be viewed retrospectively as more or less of a closed chapter in our economic history.

The course of speculation during the last quarter century is illustrated by the accompanying chart, showing the number of transactions annually upon the New York stock exchange. This diagram, like all others dealing with finance, portrays the extraordinary change in general conditions which has supervened since the panic period of 1893-97. A total of eighty to one hundred million sales annually before this period of depression now rises to nearly three-fold that amount. Even the sharp depression of 1903 marks an aggregate of dealings twice as large as in the prosperous year preceding the panic of 1893.

And lest this speculative development be ascribed to the rise of the great industrial combinations during the last decade, supplementary curves relating to a few chosen railroads have been traced upon the same scale on the diagram. The lower one shows that annual sales of Union Pacific common stock alone for three years prior to 1908 amounted to



practically half the average yearly transactions of the New York exchange in every form of listed security, mining, industrial, or railroad, between 1884 and 1898. The middle curve is even more striking. It shows the dealings in common stocks of the three speculative leaders, Union and Southern Pacific and Reading. From practically nothing in 1898, all three

railroads having recently been reorganized, the transactions in these three stocks alone attained an aggregate in 1906 of nearly one hundred million shares. The total New York stock exchange dealings of every description prior to 1898 reached this figure but once before, and that was at the height of the extraordinary speculative excitement of 1886.

The rapid pace in speculation during the first decade of the century was set by the opening year, 1901. The events of that time are familiar: primarily trust promotion and widespread consolidation of railways, culminating in the Northern Pacific panic of the 9th of May. Dealings upon the New York stock exchange increased more than fivefold in that year as compared with 1896. Activity in standard companies like the New York Central and Illinois Central had begun as early as 1897.¹ By 1900 the second-class trunk lines like the Baltimore and Ohio had fallen into line. And in the following year, the movement extended to the transcontinental group, led, of course, by the Union Pacific. In this latter company, whereas for 1899 dealings did not average over 100,000 shares in a week, they culminated in the first week of May, 1901, in a total of 1,980,000 shares. This was a volume of transactions almost equal to twice the entire capital stock. On April 24, 1901, no less than 652,000 shares of Union Pacific changed hands in a single session of five hours. The classic Erie was entirely supplanted by the Harriman company. Such specialized activity fomented a speculative craze all along the line. The aggregate of dealings in particular companies during the calendar year is shown by the following table.

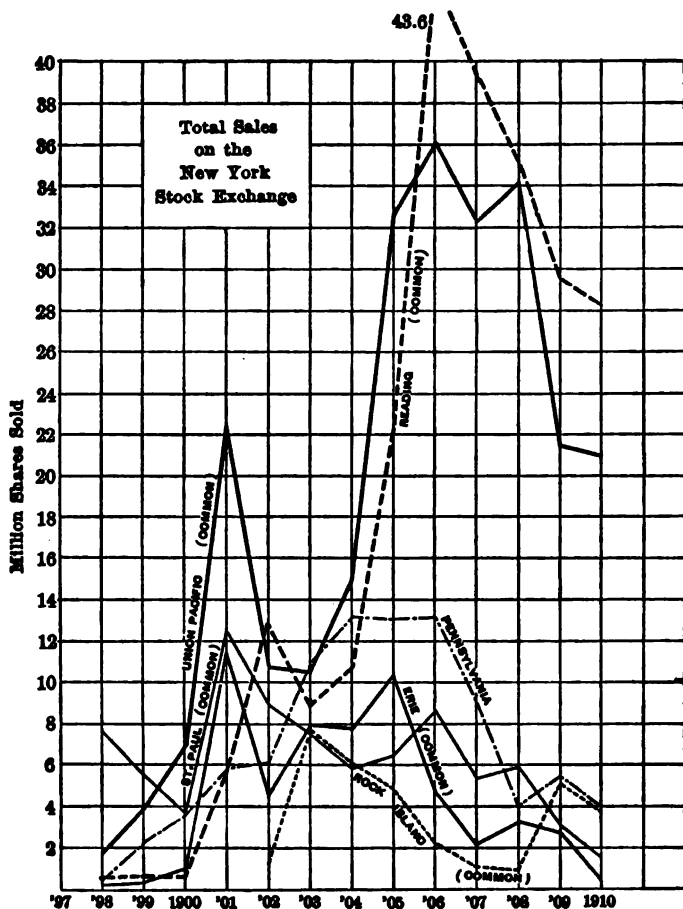
¹ The course of speculation in different companies is diagrammatically shown by weeks in U. S. Industrial Commission, vol. xiii, pp. 936-945.

	Shares		Times Sold
	Sold	Outstanding	
Atchison	12,100,000	1,020,000	12
St. Paul	12,500,000	558,000	22½
Rock Island	8,100,000	600,000	13½
Erie	11,800,000	1,123,470	10
New York Central	2,800,000	1,150,000	2½
Northern Pacific	5,000,000	800,000	6½
Pennsylvania	5,800,000	4,069,300	1½
Reading (common)	5,500,000	1,898,000	8½
Southern Pacific	11,800,000	1,978,000	5½
Union Pacific	22,400,000	1,045,000	21½
Wabash (pref.)	8,000,000	240,000	10½

Thus was the fashion set for "million share days." For the week before May 9th they averaged nearly twice that figure; and on April 30th, 3,200,000 shares changed hands in a single Stock Exchange session. Only once before, in December, 1886, had a million-share day occurred. High water mark seemed thus to have been reached. And yet the year 1906 carried the yearly total of transactions to an even higher point.

The march of events since 1898 for different classes of railroad securities is set forth upon a second diagram. Dealings in typical stocks are shown by separate curves. Most notable of course are the speculative leaders, Union Pacific and Reading common. The sharp contrast between the speculative "booms" of 1901 and 1906 is at once evident. Reading becomes the leader in the latter year; altho activity in Union Pacific common stock reached its climax, and held the center of the stage somewhat longer. More than forty-three million shares of Reading common stock changed hands in 1906; in other words, its common share capital was sold thirty-one times over within a twelvemonth. The "commodities clause" of the Hepburn Act offered the occasion; but the real cause lay in the absolute mystery which attaches

to every act of a company so financially involved in structure. An irresistible temptation to speculation is afforded both from within and without. Most of the other railroads, Erie, Rock Island, St. Paul,



and Atchison appear to have exhausted their energies in 1901, and responded but feebly in 1906 to renewed manipulation. Moreover some of these roads, notably the St. Paul and Atchison, evidently were passing

out of the erratic speculative stage and into the calmer zone of investment. The entire collapse of speculative interest in Rock Island and Erie at this time appears to be due to public appreciation of the permanent worthlessness of their common capital stocks as waterlogged concerns. The position of Pennsylvania shares is peculiar and puzzling. As a substantial investment company it would seem to have become involved in speculation largely because of the difficult financing of the New York terminal developments during this period. Yet there can be no doubt that all of the more conservative and reputable roads were more or less affected by the prevailing furor. Especially was this the case in trunk-line territory; where the problem of control of all the minor companies by the Pennsylvania and Vanderbilt interests was being worked out; and, of course, was of necessity being done in secret so far as the general public was concerned.

Various recent changes in fashion of investment have coincidentally tended of late to promote greater activity in speculation in bonds. Foremost among these are the income bonds created during the reorganizations of 1896-97. Thus, during 1901 the Mexican Central first income 3s were handled more than twice over. The uncertainty, even at best, of forecasting the time when interest may be paid, with the added chance of changes of policy as to maintenance or of manipulation of accounts, as in the recent Central of Georgia case, renders such issues peculiarly liable to change.¹ The debenture bond, without its right of foreclosure, leaving it merely as a prior lien on earnings instead of assets, is a more sensitive creature than an old time bond. And most important of all,

¹ This case is discussed in detail by Dr. Dewing at p. 397 *infra*.

the widespread resort to convertible bonds of late years extends the natural susceptibility of stocks to changes of wind or weather into the domain of funded obligations. Such securities as the Baltimore and Ohio convertible 4s and especially the various Union Pacific convertible bond issues and the Oregon Short Line Participating 4s of 1904, all necessarily follow at a modest distance the fluctuations of the stocks upon whose welfare their own future depends. Such phases of recent financing have served to counteract the steadying influences upon bond values of the passing of even the memories of the great bankruptcies of 1893-97.

Single traders in a time like 1901, and to a considerable degree ever since, may deal in a hundred thousand shares in a day; and small pools may handle several times that amount. The number who, single handed, can operate to the extent of 15-25,000 shares in a day is said to be considerable. An episode of December 27, 1909, was illuminating, not only in regard to the volume but the technique of such speculation. The principal, a prominent officer of the Rock Island Company, distributed to each of twenty brokers an order to buy 2000 shares of his own road "at the market." Intending, of course, to distribute an equal number of identical orders to other brokers to buy, and thus to create an impression of great activity, covering up his own unbalanced dealings, he nevertheless for some reason failed to do so. The sudden unsatisfied demand for 40,000 shares rushed up the price by 31 points in five minutes and threw the entire exchange into an uproar. The motive in such "wash sales" was statistically shown in the evidence in the Montreal and Boston case in 1905. It appeared that the promoters

of this mining company had in one day bought 94,000 shares (mainly from themselves) for \$271,000, and sold 87,000 shares (mainly to the public) for \$275,000. An appearance of general interest in the stock was thus created; and on the basis of it the quotations were "washed" up from \$1 to \$2.50 per share. Meantime they were being quietly unloaded upon the public at the inflated price.

The notorious manipulation of quotations for Rock Island securities finds a counterpart in the recent pool operations in Reading stocks. The highly involved corporate organizations of this company, as has already been suggested, the facility with which its actual financial status may be concealed by expert accounting, the "commodities clause" of the Act of 1906, and the prolonged litigation over the standing of the anthracite coal combination under the Sherman Act,—all these factors have served to lend an air of portentous mystery to every movement of its shares. The rise in interest in it is manifested by the following table showing the number of transactions in Reading common by years.

Years	Shares sold	Years	Shares sold
1904	10,694,000	1908	85,165,000
1905	22,818,000	1909	29,842,000
1906	48,764,000	1910	28,196,000
1907	89,141,000		

The outstanding common shares numbering 1,400,000, it thus appears that its common capital stock,—residuary legatee of earnings after satisfaction of the fixed demands of its preferred shares,—was handled in 1904 seven and a half times over, in 1905 sixteen times over, and in 1906 thirty-one times over. The slightly flagging interest in it was revived again in the spring of 1909, when in three months its common capital was handled four times over. During the

third week in April, 1909, sales of its common stock equalled one half the total outstanding within five full working days. All this activity has naturally been accompanied by the widest and wildest ranges of quotation. From 1904 below \$40 per share, to more than four times that figure in 1906, its erratic course has been a source of bewilderment to all observers. More than once the violence of its changes, as when in January, 1906, it was rushed up from \$139 to \$164, only to fall again within a month below its former level, and within a year to \$70, has seriously menaced the general stability of the New York stock exchange. Plunging, attempted cornering, manipulation of the crassest order have been carried on by what appears to be one of the most powerful pools in existence.

The specific form of contract entered into by the participants in these pools has several times been made public as a result of subsequent investigation. In the Southern Pacific pool of 1902, to be described later, the gist of the compact was contained in the following paragraph:—

“Further we hereby authorize the said agent and manager to sell at his discretion the whole or any part of the certificates purchased, and in like manner to repurchase and again sell, so buying and selling at his discretion, provided, however, that the said certificates be not sold at a price that will subject us to any loss on the entire transaction.” The agreement in the Hocking Coal pool, which, together with the one in Rock Island, collapsed in 1910, reads as follows:—

The undersigned, being desirous of purchasing at least 20,000 shares of the common stock of the Columbus and Hocking Coal and Iron Company, do hereby agree to purchase the same or so

much thereof as in the opinion of the hereafter appointed managers may be deemed advisable in the proportions set opposite the respective names of the said subscribers, and we hereby appoint ———, our agent and manager, to make such purchases at such time or times before the first day of September, 1909, unless sooner dissolved by the majority of the stock subscribed, in such manner and amount, and at such prices as in his judgment shall be to our mutual advantage.

Each one signing this agreement to pay on demand for so much of said purchases as his subscription (as near as may be practicable) bears to the whole amount subscribed, as such agent or manager may require. Also to return the same amount of certificates or part thereof at any time when called for at any time before the first day of September, 1909, on receiving from the manager the amount paid therefor, with interest at 5 per cent per annum. We further agree on any call from said manager to deliver to the said manager the same certificates theretofore delivered to us by him.

Further, we hereby authorize the said agent and manager to sell at his discretion the whole or any part of the certificates purchased and again buy, so buying and selling at his discretion. It is further agreed that any profits or losses incurred through the purchase and sale of said certificates shall be divided in proportion to the amount subscribed for by each one signing this agreement. No one signing this agreement shall have the right to call for a statement of accounts growing out of transactions herein authorized except on the request in writing of 60 per cent in amount of certificates subscribed.

Turning now to the consideration somewhat in detail of specific instances of speculation in railroad securities, they may perhaps best be grouped in two classes: speculation by "insiders" in shares of their own companies; and manipulation by "outsiders," either for its own sake or else with a view to wresting control from those who may be at the time in power. In both cases, the interests of the general body of shareholders are bound to be sacrificed for the benefit of a selected few. Of the two classes of speculative activity, the latter is probably less prejudicial in effect, inasmuch as the two

contending parties are more apt to be evenly balanced in resources. Sooner or later, moreover, the affair is bound to become public property. In such a struggle, the ordinary stockholder becomes merely a spectator, albeit a heavily interested one, unless it happens to come about that he holds the balance of power between the contending parties. In this contingency, of course, his position is a very strong one. But in those cases of speculation where the "insider" is pitted against the general public, including the great body of other shareholders, every advantage is upon the side of the privileged directorate or administration. All others are helpless, except in so far as the courts have been able to protect the rights of minority shareholders in cases of flagrant abuse of power.

One of the most serious of recent breaches of good faith between directors, their own shareholders, and the general public, in the interests of speculation was the manner in which in August, 1906, the Union Pacific dividend was advanced to its present high figure. This incident marked the culmination of the furious speculative campaign in the shares of this company which carried its common stock from a merely nominal figure in 1898 to nearly \$200 per share in 1906. From this elevation it dropped to \$100 in the following year. Not, however, the fact but the manner of increasing this dividend is subject to criticism. The Southern Pacific road was the largest single outside investment of the Union Pacific. It had been gradually fattened through many years by reinvestment of all its surplus in betterments. The harvest time had now come. Directors of both roads met in the same room at practically the same time. The Southern Pacific common stock was

placed upon a five per cent dividend basis. From this source and others, the Union Pacific company abruptly raised its rate from six to ten per cent, where it has since remained. The fact of this advance was rigidly concealed for two days, giving opportunity to those interested to reap large profits from the inevitable advance in price attendant upon publication of the fact. No official investigation has revealed the extent of these private operations. It appears to be well established, however, that aside from whatever interest the directors and their friends had in the stock market, a powerful "social pool" in the stock, which did not close out its holdings at the time, overstayed the market; and suffered heavy losses during the great decline of prices which soon took place.

The foregoing Union Pacific incident recalls a notorious episode in the early days of the New York Central road. On December 19, 1868, the directors, after a midnight meeting, announced an eighty per cent dividend in new stock and a four per cent cash dividend. The Financial Chronicle of that day thus comments upon the episode: —

The real occasion of the dividend is to be found in the speculative operations of parties associated with the management. It is a matter well understood in the better informed circles of Wall Street, that, some few months ago, a knot of capitalists, mostly in the direction, combined for the purchase of \$7,000,000 of the stock of the company; and in order to facilitate the purchase and the carrying of the stock, a loan was contracted with a London banking house upon the stock as collateral, the loan to run for two years, if necessary. The stock was systematically depressed previous to the purchase, and was bought at from 84 to 95, averaging about 90.

The declaration of this dividend is the consummation of the scheme. The clique realize about 60 per cent profit on \$7,000,000 of stock, or say \$4,200,000, and a family prominently connected

with the road makes a still larger profit. But how has it fared with the ordinary stockholders? At the time these gentlemen formed their magnificent scheme, the stockholders outside the "ring" were not only held in utter ignorance of the private plans of the directory, but the stock was systematically depreciated below its real value, so as to frighten them into selling to the directors and their friends.

This operation is a fair illustration of the manner in which directors speculate upon their exclusive knowledge of the affairs of corporations, to the injury of the non-official stockholders.

Still a third classic instance of the use of dividend increase, apparently to make a market for securities unloaded by "insiders," is the Atchison seven per cent dividend of 1887, increased from six per cent on the very verge of bankruptcy. No elaborate defences of this action have ever cleared the reputations of the guilty directors.¹

Abrupt increases of dividend in connection with speculation for a rise by "insiders" are not the only means of surreptitiously taking advantage of foreknowledge of future events. Oftentimes the actual policy of the company in respect of surplus income devoted to betterments may be known only to a privileged few, the real condition of affairs being concealed by means of involved accounts. This it is which in part renders the stocks of non-dividend companies so susceptible to speculative manipulation. Of course the necessarily low quotations of non-dividend stocks offer an additional incentive; as a rise of a point or two in value of a stock which cost only \$25 represents proportionately eight times as much profit as an equal rise of price of a share which cost \$200. But it is unquestionably also the mystery attaching to a non-dividend security which is an aid to the professional manipulator. Chance

¹ Daggett, *Railroad Reorganization*, p. 198.

and change, — the daily bread of speculation, — have no concern with a security offering a rate of constant return. Speculation has promptly shifted from the preferred to the common shares of all such roads as the Reading and Atchison, just as soon as the preferred stocks began to pay regular dividends. The Lehigh Valley road, on the other hand, has of late been speculatively interesting largely because of its unrevealed potentialities. Between 1893 and 1904 the policy was rigidly pursued of suspending dividends, even on the preferred shares and of devoting every penny of income to development of the property; and yet, of course, no one outside of the management knew how extensive the betterment in reality was. The result has been an erratic career on the stock exchanges quite equal in range of prices to the wildest antics of Reading common shares. Within the year 1910, the quotations ran up to \$242, down to \$125, and up again to \$175. This was associated with the Pearson-Farquhar plans, subsequently described, for an ocean-to-ocean line, which would have entailed extensive issues of new stock as well as greatly increased dividends. Meantime the general body of stockholders and the public remained in practical ignorance of the meaning of it all. The highly involved intercorporate accounts of the Rock Island Company, especially prior to their simplification in 1906, undoubtedly promoted its speculative activity for the same reason.

A merely negative policy of secrecy in administration only differs in degree from one of positive deception. Entirely fictitious statements as to earnings may be effectively utilized by "inside" speculators for a rise. Herein lies the possible advantage of even temporary control of a property, held, if necessary,

by means of operations on margin, instead of by actual ownership. Prior to the careful analyses of expense accounts, prescribed by the Interstate Commerce Commission, it was always possible to "skin" a road, that is to say, to postpone the customary and in the long run necessary outlay for maintenance. Savings thus effected could be utilized for enlarged dividend disbursements. On the strength of this showing, the speculators could dispose of their holdings at a profit, and leave the road practically gutted. In the old days a fictitious appearance of prosperity might easily be created by sending out orders to get traffic at any cost; thereby producing large gross revenues, and at the same time reducing maintenance expenses in the same proportion as the rates were cut. Net earnings would rise with the enlarged gross revenues, but the property, of course, would be steadily depreciating in condition. Such were the tactics charged against the old Atchison management in 1890, in order to enable the then embarrassed Barings to unload their heavy investment in the road. Such action they were compelled to take in an endeavor to avert a collapse of their South American enterprises. Such also was the program apparently threatened by the Gates syndicate in 1902, while temporarily in control of the Louisville and Nashville road. A general disturbance of the entire rate situation in the South promptly forced the bankers responsible for the Southern system and other roads in that territory to take over the property from the Gates syndicate at a large profit.

The series of events leading up to the collapse of both the Baltimore and Ohio, and Atchison roads in the nineties affords instructive examples of deliberate falsification of accounts by "insiders" in order to

create a market in which to unload upon the public.¹ In the case of the Atchison, income was apparently overstated during four years to 1893 by more than \$7,000,000 in the aggregate. Of this sum nearly \$4,000,000 consisted of rebate accounts, carried as an asset but having no value whatever. Ordinary expenditures were charged to capital account; uncollectible traffic balances were carried as assets; and arbitrary additions to earnings were made under orders from the East. Annual deficits, in one year no less than \$3,000,000, were thus covered up; and an exhibit of steadily increasing earnings was publicly made. The revelations in 1896 in connection with the reorganization of the Baltimore and Ohio road were no less scandalous. During seven years and two months, dividends amounting to \$6,269,000 had been declared, of which expert accountants averred that less than a million had really been earned. Net earnings had been systematically overstated, operating expenses had been charged to capital account as new construction; depreciation had been inadequately charged off by manipulation of profit and loss account; and, in the meantime, new capital had been issued to the amount of \$50,000,000, and floating debt had risen from \$3,500,000 to \$16,000,000, without any corresponding new investment in the property.

The history of the Cincinnati, Hamilton, and Dayton road affords illuminating evidence of the disastrous effects upon a company of a series of speculative managements; managements, that is to say, chiefly interested in temporary control for purposes of speculation and sale to others, rather than of per-

¹ Details as to this are well marshalled in Daggett, *Railroad Reorganization*, Harvard Economic Studies, 1906, pp. 21 and 208.

manent development. Before it was first scuttled in 1886, it was conservatively financed, and was regularly paying dividends. Its shares were selling at or near par. At this time a New York banker named Ives purchased control by means of the well-known stock exchange devices of pyramiding.¹ Using each purchase of stock as collateral for loans with which to purchase more stocks, the price was run up to \$150 per share, and by systematic manipulation was held near that figure. It is obvious that failure to support the price would lead to calls for more margin and thus bring about utter collapse of the artificial control. Branch roads were then purchased and heavy bond issues by them were floated by means of guarantees by the parent company. Ambitious projects for extension to St. Louis, as a formidable competitor of the Baltimore and Ohio, almost forced that company into its purchase, just as the West Shore road was unloaded upon the New York Central, and the Louisville and Nashville in 1902 was forced upon the Atlantic Coast Line. The scope and outcome of this Dayton project are best described in the annual report of the road for 1888.

At this date [June, 1886] the capital stock of your company was \$3,500,000 common and \$1,000,000 preferred. When Mr. Stayner and Mr. Ives resigned the presidency and vice-presidency respectively, August 9, 1887, the capital stock outstanding, as they stated it, had been increased to \$4,000,000 common, and \$11,000,000 preferred bearing 4 per cent.

The bonded debt of the company June 15, 1886, outstanding was \$996,000 7 per cent, \$1,434,000 6 per cent, and \$400,000 5 per cent consolidated sinking fund bonds. This debt had been increased at August 9, 1887, by \$64,000 consolidated sinking fund 5 per cent bonds and \$2,000,000 second mortgage 4½ per cent fifty-year bonds.

To represent this enormous increase of liability and conversion and appropriation of securities owned by the company, amount-

¹ Bradstreets, vol. xv, p. 552, gives a good summary of these transactions.

ing in the aggregate to about \$14,500,000 par value, your company, August 9, 1887, had betterments of its road, real estate, and additional equipment representing an expenditure of less than one million dollars. Your company had in addition credit on the books of Henry S. Ives & Co. for a deposit of upwards of \$12,000,000, subject to check on demand, but when the firm of H. S. Ives & Co. made an assignment for the benefit of creditors, August 11, 1887, the assets of that firm included less than \$1,000 in cash.

But the unhappy history of the Dayton road does not stop at this point. Its later manipulation has mainly had to do with repeated attempts to turn it over to some of the trunk lines, always, of course, at a profit. Within three years prior to 1905, the road has been passed in succession through the hands of no less than four syndicates. The first pool was originally formed in 1902 to purchase the Père Marquette road, running crosswise of the main trunk lines up into Michigan. The plan was by threat of extending it east and west to Buffalo and Chicago to force it upon the Vanderbilt roads at a profit. This project failed, leaving these capitalists with a heavy burden of unsalable and non-dividend paying securities. In the meantime another independent cross line, the Chicago, Cincinnati, and Louisville, had been constructed almost into Chicago by a second syndicate. A third pool already controlled the Dayton road. These three groups all overlapped in membership. All parties finally decided to join forces. The Père Marquette was sold to the Dayton road, by payment in Dayton bonds and notes at the rate of \$125 for Marquette stock which had cost \$85 per share. This recompensed the first syndicate liberally. The second syndicate which had built the line toward Chicago was paid for its services in Marquette notes. The third syndicate, controlling the Dayton road, now made its profit in turn by selling the combined

properties to a fourth syndicate in 1904. And it was this interest which so nearly succeeded in disposing of the road to the Erie at \$160 per share in the following year. This was brought about by threats to turn the entire property over to the so-called Hawley interests, which were engaged at the time in piecing together various odds and ends in trunk-line territory. Fortunately the Erie management discovered the true state of affairs in time, and all arrangements for merger were abrogated.

Turning next to speculation by "outsiders," in order either to gain control of a company from others, or else merely to manipulate prices in their own interest, a typical example is afforded by the Keene Southern Pacific pool of 1902.¹ This episode is significant as showing the sort of attack which interests in control of a road must be at all times ready to repel, unless they actually control the property by ownership of a majority of the voting shares. The general situation must first be understood in order to comprehend the plan of campaign. The Union Pacific road, then in process of reconstruction, ended at Ogden, Utah. It was dependent for its through connection to San Francisco upon the Central Pacific road, which was a part of the Southern Pacific system. In order to acquire this necessary link in the trans-continental chain, the Union Pacific in 1901 purchased a practically controlling interest in the Southern Pacific, altho it was considerably short of a majority of the shares outstanding. But the major part of this extended system, reaching through Southern California to New Orleans, seemed at the time to be quite a distinct property, for transportation purposes,

¹ The following account is based upon litigation lasting throughout 1903, testimony in which was currently reported in the financial and railway journals.

from the small portion needed by the Union Pacific to complete its direct through line to the Golden Gate. The Union Pacific Company at once caused its recent acquisition to embark upon an extensive program of betterments. No dividends were paid by the Southern Pacific, in order that all net revenue (and there was a substantial amount of it) might be devoted to upbuilding the property. Nevertheless, just as in the case of the Lehigh Valley road, the actual extent of this rehabilitation and improvement remained for the general public largely a matter of conjecture.

The Keene pool, as appeared in the course of subsequent litigation, was dated January 29, 1902, and was to be continued until April 1, 1903. It was to become operative upon the purchase of 200,000 shares of Southern Pacific stock, which amount might be increased to 400,000 shares. As there were only 1,970,000 shares outstanding, and as the Union Pacific had only acquired 750,000 shares from the Huntington and other estates in 1901, such concentration of ownership in other hands was a matter of some importance. As a matter of fact, it appeared later that some 244,000 shares were actually acquired. The form of pooling contract adopted was much like that in the Hocking Valley Coal pool, as has already been shown. Having acquired this substantial proportion of the capital stock, the next step was to bring about a rise in its market quotations in order to unload upon the public. There is no evidence at all of an intention to continue the investment in the stock. Much of it in fact was not really owned, but was merely carried on margin. The plan was simple. The Southern Pacific Company was to be forced to modify its program of devoting

all net income to betterments; and was to be compelled to begin payment of dividends upon its capital stock. Such action would obviously serve the purpose. An elaborate campaign of publicity was then inaugurated. It was alleged that the Union Pacific was not really upbuilding the entire Southern Pacific road at all, but was merely "fattening" the Central Pacific link, in order at the proper time to cut it off and turn it over to the controlling company, thus completing the Union Pacific direct line to the coast. This in turn led to a spirited contest for control of the next annual meeting, recalling in many respects the struggle over the Illinois Central in 1907. Injunctions were sought to prevent the Union Pacific from voting on its 750,000 shares of Southern Pacific stock at the annual meeting on April 8, 1903, — only two days, by the way, prior to the original date of expiration of the pool. This action failed. In the meantime the Harriman party had succeeded in accumulating enough proxies from other stockholders to insure their control. Thus balked in its program, the pool was compelled to liquidate its holdings. This it did in the rapidly declining market of 1903, at very heavy loss. It was estimated at the time that the holdings which had cost about \$16,700,000 were closed out at a loss to the pool members of approximately \$3,000,000. Thus ended the chapter, about as disastrously as the Reading pool in 1906.

In form precisely like the Southern Pacific pool, altho differing in outcome, was the Gates raid upon the Louisville and Nashville road in April, 1903.¹ This road being about to issue \$5,000,000 of new stock,

¹ This transaction was investigated upon complaint of the Kentucky Railroad Commission by the Interstate Commerce Commission in 1903-03. The complaint and answers are reprinted in the 23d Annual Report of the Railroad Commission of Kentucky.

it appeared likely that the market quotations would decline substantially by reason of the increased floating supply. Many traders in consequence sold the stock "short"; expecting to cover their contracts at the lower figure. The Gates pool quietly bought all the shares offered; thereby acquiring some 306,000 shares out of a total of 600,000 outstanding. With this clear majority, they forced the bankers in charge of the Southern road, which could ill afford any disturbance of the rate situation, to take it off their hands. The pool appears to have profited handsomely by the transaction, having acquired 102,000 shares for less than \$110 per share and the balance at \$125; and then having turned it over to J. P. Morgan and Company, at about \$130 per share for the first lot, and \$150 per share for the second. It was then placed in the hands of the Atlantic Coast Line Company "for safe keeping" at \$160 per share. In much the same way and at about the same time, the Monon line from Louisville and Chicago was bought up by a speculative pool and finally turned over for joint control to the Southern and the Louisville and Nashville roads.¹ Such episodes as these are not only illuminating in themselves, but they serve to explain the extraordinary fervor of speculation which, as we have already seen, culminated at about this time.

The speculative acquisition of the Boston and Maine Railroad by President McLeod of the Reading road in 1892, however laudable the desired end in view for his company may have been, reveals the hazards of such modes of finance.² Early in that year, shares of the New York and New England and

¹ A. D. Noyes in the *Forum*, Oct. 1902, p. 204.

² U. S. Industrial Commission, ix, pp. 561-576, contains testimony on the subject. Daggett, *Railroad Reorganization*, pp. 123 *et seq.*, traces its effect upon the Reading Company. Bradstreets, vols. xx and xxi, contains many additional details.

Boston and Maine companies began to advance mysteriously, and in October virtual control of both by the Reading was expressed through the election of McLeod as president. The operation was difficult to understand, as the Reading had always been impecunious and was then in a peculiarly precarious condition. On February 20, 1893, it suddenly went into bankruptcy. The story is succinctly told in the report of the directors in the following January. In substance it was a case of speculation "on margin," and of the margin having been "wiped out."

On the 25th day of October, 1892, President McLeod authorized the purchase of shares in the New York and New England Railroad Company, and ultimately 32,000 shares were acquired. President McLeod originally put up his own securities as collateral to protect the purchasing brokers. Subsequently, as collateral to secure these purchases, President McLeod, without having previously obtained the authority of the board of managers, drew from the treasury of the company and pledged the following securities [treasury securities enumerated].

The fact of the withdrawal and use of the securities was first formally brought to the attention of the board on December 14. On December 24 resolutions were passed ratifying the action of Mr. McLeod and indemnifying him for advances made on his individual account to the extent of \$400,000. Messrs. F. H. Prince & Co. and Messrs. Ervin & Co. [the brokers through whom the purchases were made] subsequently gave notice of their intention to sell the shares for the purpose of reimbursing their advances, and ultimately, in pursuance of such notice, all of the shares were sold. After crediting the company with the net proceeds of sale, the total loss on the Boston and Maine Railroad stock was \$918,008.09, and on the New York and New England stock \$553,996.15, or a total of \$1,472,004.24.

The most recent spectacular collapse of an ambitious attempt to create a transcontinental railway line on the basis of borrowed money occurred in July, 1910.¹ From some unrevealed source large blocks

¹ The financial journals of July 28, 1910, and the following week abound in descriptive matter.

of railroad stocks had been pressed for sale upon the exchanges for some weeks. It had been known since January that some mysterious pool had been quietly accumulating large holdings in various roads, especially of the Rock Island Company. The shares in other apparently unrelated properties, like the Lehigh Valley, had also been advancing sharply. The entire plan was disclosed when suddenly it was announced on July 28th that an English syndicate, heavily interested in a chain of roads from the Atlantic to the Pacific, had been forced by the steady decline in quotations to transfer all its holdings *en bloc* to a leading American banking house. The nucleus of the transcontinental system was to have been the Rock Island. It was to have been carried to the west by the Denver and Rio Grande, a supposedly Gould property, which in turn controlled the recently completed Western Pacific road to the coast. But in order to hold these, the Missouri Pacific had also to be included. Eastward, the line was to be made up of the Wabash and the Lehigh Valley roads to Atlantic tide water. No details have ever reached the public. But it was rumored that an investment of approximately \$30,000,000 was finally liquidated for about half that sum. Had the affair not been terminated by private arrangement, in other words, had this huge volume of securities been openly forced upon an already over-loaded market, a disastrous panic might have been precipitated.

A common mode of protection against the raids of outside speculative cliques is the creation of a voting trust.¹ With a body of trustees, commonly five in number, all shares of capital stock are deposited, in exchange for so-called voting trust certificates. The

¹ Cf. Daggett, *op. cit.*; and the Yale Law Journal, vol. xiii, 1904.

important point, however, is that such exchange of securities is for a stated period of time; and vests all voting power on the stock in the hands of the trustees. This assures stability of control and continuity in policy. It has been a common feature of most of the great railroad reorganizations in recent years. Some voting trusts have been continued for many years, notably on the Ontario and Western road. When entered into for an indeterminate period, only terminable upon the declaration of dividends successively for a given time, it may operate disadvantageously to shareholders; but in the long run seems to be a convenient and necessary safeguard.

What remedies may be applied to check this speculative activity, in itself a menace to the safe and sane operation of the railroads of the United States? A powerful one has already been applied in the beneficent publicity features of the recent Hepburn Act of 1906, and as still further amended in 1910 in the Mann-Elkins law.¹ Little more in the way of specific legislation would seem to be needed; altho liberal appropriation for administrative oversight by means of expert accountants must of course be currently made by Congress. So far as checking speculation by "insiders" is concerned, the strict prescription by the Interstate Commerce Commission of the practice as to making depreciation charges would seem to be most effective. The matter technically bristles with accounting perplexities, and has been most bitterly opposed by leading railroad men. Some of this objection is more or less valid. Yet

¹ These provisions are described in the *Quarterly Journal of Economics*, vol. xii, 1906, pp. 22-51, and vol. xiv, 1910, pp. 593-633. Accounting features are especially discussed *ibid.*, vol. xiii, 1908, pp. 364-383.

much unnecessary bitterness in discussion of the subject has been engendered by a misconception of the rules of the Commission. It is alleged that the insistence upon a clear differentiation between capital and income account in the matter of charging for depreciation or for betterment and new construction, will compel the companies to capitalize all betterment work instead of caring for it in part from surplus income by charging it to operating expenses. This by no means seems to follow. No actual policy as to the form of payment to be adopted in cases of improvement work is enforced by law. The only requisite is that, whatever the policy of the road may be, it shall be made evident in the published accounts for the benefit of all parties concerned. No one can question for a moment the expediency of oftentimes adjusting maintenance outlay in some measure to the exigencies of the moment; either by postponing it in part, or, if possible, by going to the other extreme and expending freely for maintenance in order to save in direct operating cost. Not even the excuse of artificially creating a favorable income return in order to successfully float new bonds or stocks is valid or admissible in the case of most companies in normal times. The accounts should reveal to all, and especially to public authority, the precise policy which is being pursued. Padded or starved income statements have in the past been one of the most prolific sources of profit to "insiders" in the case of speculatively managed roads. Most sound roads, of course, do not resort to such practices; but laws must be drawn to meet possible offences, even if they be exceptional. It is a matter for congratulation that such manipulation is becoming increasingly more difficult under the accounting supervision of the Interstate Commerce Commission.

Beneficent in its effects, also, will be all further careful regulation of intercorporate accounting. The consolidated balance sheet, as used by the Rock Island and Reading companies, is another fecund source of evil. The classic financial reorganization of the Alton road was so adroitly covered up in the accounts, that, as has been technically shown in the *Journal of Accountancy*, the holding company could pile up a surplus or incur a large deficit without danger of discovery. Not a trace of the very recently revealed and entirely unsuspected indebtedness of the Oregon Short Line to the Union Pacific Company, to the amount of \$72,000,000, could be found in the reports of either company, until the directors chose to let it be known.¹ Such things should not be. Nothing so invites speculation as mystery. Whether the so-called "insiders" profit by it or not, is not the main question. Such secrecy certainly provokes speculative manipulation in others. So far as publicity can reasonably go, it should be applied with the utmost vigor.

Speculation thrives in the main upon securities of low market value. Such low quotations are usually the result of an over issue of securities; in other words of capitalization more or less in excess of either physical value or earning power. A second restraining influence upon speculation in future may therefore indirectly flow from enforced publicity, so far as it puts an end to the evil known as stockwatering.² This form of financial abuse is much less prevalent than formerly; it is in fact now non-existent probably in the case of most of our substantial roads. Yet in so far as publicity or physical valuation may serve to restrain the excessive output of securities by a

¹ New York Evening Post, Financial Supplement, Oct. 1, 1910.

² Discussed by the author in the Political Science Quarterly for March, 1910.

few erring companies, speculation may reasonably be expected to diminish as a consequence.

One of the most powerful checks may ultimately be found in some prohibition of excesses in inter-railway financing. Wholesale investment of corporate funds of one railroad in stocks of other railroads, especially upon a credit basis, has been a conspicuous and unwholesome feature of the last few years. The collateral trust bond has been a useful means of accomplishing this purpose. Of course as a means of building up a logically unified system, particularly in linking together naturally connecting roads into a through line, such intercorporate financing is necessary and proper. But when applied, as by the Union Pacific and the trunk-line roads, to control or investment in naturally competing or even entirely remote and disconnected properties, it may become a public menace. Particularly does it invite corporate speculation, that is to say, the purchase and sale of one road by another, not as an incident to operating efficiency, but merely for the sake of profit. It is not a wholesome condition of affairs that a railroad, chartered for the conduct of transportation, should be engaged in stock-exchange operations of this sort; and that a large part of its revenues should be derived either from such sources or from its investments in scattered and wholly unrelated roads. It is greatly to be hoped that the possibility of public interference to prevent such tendencies, even tho fraught with the danger of crippling suitable private initiative, may be rendered more remote by greater circumspection on the part of the directors of some of these great quasi-public companies.

Positive discouragement of undue speculation in railroad securities in future may possibly also be

looked for in the imposition by the states of taxes upon all stock-exchange transactions. A rich source of income exists therein; but the tax must, of course, be so applied as neither to hamper legitimate transactions nor to lead to escape by migration to other states. So far as it is practicable, a substantial tax upon all transfers of stock would seem to promote the general welfare, without unduly burdening the necessary processes of exchange. And, finally, a healthy public sentiment which shall frown upon manipulation of stocks for private profit, especially by those who occupy positions of trust, or which views large fortunes accumulated by such means as improperly acquired, cannot fail to exercise some influence. After all is said and done, the high regard of one's contemporaries is among the most coveted rewards of life. The country would seem to have passed through an extraordinary period of moral awakening of late. We may perhaps never again be called upon to witness such an orgy as this last decade has revealed. The outlook is far more satisfactory in this regard than it was five years ago.

The foregoing outline of speculative manipulation of railway securities tells but a sorry tale at best. It presents the most unpleasant aspect of railroad financing, embracing a range of operations from mystification and petty deceit to utter fraud. But the conclusion must be carefully avoided that, because such offences have at times been committed, American railroad finance on the whole is unsound. Such a conclusion would be absolutely unfounded. A large majority of our common carriers are certainly as honestly administered as are private businesses as a whole. Nor has the standard of integrity in the main ever been as high so it is at present. But, as

always, the innocent are condemned to suffer with the guilty. No single group of persons has a deeper interest in the prevention of such breaches of trust in future than that charged with the present management of this great industry.

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DISTRIBUTION OF INCOME IN GREAT BRITAIN AND INCIDENCE OF INCOME TAX

SUMMARY

Mr. Mallock's estimates, 216. — Average number of incomes per unit of the range of incomes in each group used as a measure of density, 218. — Density coefficients, 220. — Three strata of income receivers, 221. — Density coefficients vary with the reciprocals of the cubes of the corresponding incomes, 222. — Corrected average incomes for groups, 224. — Rectified tables of income distribution, 226. — Advantage in taxing all incomes above £100, 227. — Formula for graduation of the tax rate, 228. — Tax yield controlled by varying the ultimate rate, 229. — Its incidence controlled by varying the size of income to which half the ultimate rate applies, 232. — Modifications to fit the use of step rates and of abatements, 236.

THE *Nineteenth Century* for March, 1910, contains a most interesting article by Mr. Mallock, in which he makes a careful estimate of the totals of the incomes of those in Great Britain receiving more than £115 per year.¹ Much in such estimates is to some extent conjectural, because the official statistics are still far from sufficient to furnish the full data required. Mr. Mallock's estimates have been objected to on this ground by statisticians whose professional practice compels them to keep rigidly within the limits over which the full facts are proven by well authenticated figures; but they appear to take into account more numerous considerations and detached items of reliable information than have been previously brought to bear upon this study; while his deductions from the available figures seem to be sane and prudent.

¹ Since this paper was written, Mr. Mallock has published his estimates, more fully elaborated, in his volume on *The Nation as a Business Firm*, which is discussed by Professor Young below in the present issue, p. 376.

The table in which he summarizes these conclusions is the first seen by the present writer which bears internal evidence of enough completeness and approximate accuracy to make it worth while to found upon it any scientific theory or formula, rational or empirical. In any attempt to frame such a formula it should be constantly borne in mind that the formula can never be expected to fit exactly all the statistical figures throughout the full range of the phenomenon. This for two reasons: the first that the statistics are known to represent the actual facts only with rough approximation, and, as said above, to leave out of account many factors which can be filled in only by conjecture; and the second, that the actual facts themselves certainly do not follow with precision any exact mathematical law. As regards this latter reason, it is important to note that the approximation to mathematical law is certain to be closer the larger the number of individual cases which go to form the average. Thus there are enormous numbers of people who have small incomes and very few who have very large incomes. It follows that mathematical law should be more discoverable in the statistics of the poor. The number of the very rich is so small that no averaging proper is possible, and eccentric deviations from mathematical law are inevitable. Nevertheless, when the statistics of the very rich over a very long series of years become available, closer averages for this class also should become possible, provided that the concurrent influence of historical progress in time were known and allowed for.

The first four columns of Table I give the more important conclusions arrived at by Mr. Mallock. In the first column are given successive ranges of income from £115 upwards. In the second are given

the aggregates of the incomes of all persons coming within these ranges. In the third appears the average individual income as estimated for each range, and in the fourth the number of persons receiving income within each range.

In the first place it must be noted that the figure in the third column is a purely conjectured average; secondly, that the number in the fourth column is an estimate obtained by dividing column 2 by column 3; thirdly, that this fourth column number has been revised by the present writer to give a closer arithmetic correspondence between it and columns 2 and 3 from which it is derived.

TABLE I
DISTRIBUTION OF INCOME

Range of Income	Total Income within Range	Assumed Average over Range	Number of Income Receivers within Range, deduced from Average	Number per £1 Range
	Million			
£115- 150	£333	£145	2,295,000	65,600
150- 160	70	155	451,500	45,150
160- 200	250	180	1,389,000	34,725
200- 300	100	250	400,000	4,000
300- 400	66	350	188,500	1,885
400- 700	86	530	162,000	540
700- 2,000	207	1,200	172,500	133
2,000- 3,000	47	2,500	18,800	18.8
3,000- 5,000	54	4,000	13,500	6.75
5,000-10,000	67	7,000	9,600	1.92
10,000-50,000	40	19,000	2,100	.0525
50,000- ———	35	110,000	320	.....
Total	£1,355	.....	5,102,820	.....

Again, observe that the assumed averages are in many cases merely the arithmetic means between

upper and lower limits of the range. It will appear presently that this arithmetic mean is always higher than the true average: consequently the numbers in column 4 are smaller than the actual numbers. In the first line of the table the error is greater, the assumed average being higher than the arithmetic mean.

From the table as it stands, in these first four columns no progressive law is apparent: the figures seem to vary in an extremely erratic fashion. This results, however, from the want of uniformity in the extent of the ranges in which the whole is sectioned. These ranges are £35, £10, £40, £100, £100, £300, £1300, £1000, £2000, £5000, £40,000, and from £50,000 upwards. Here there is neither uniformity nor any regular progression. Without reduction on some systematic plan, no law could be discoverable. Evidently the proper method is to reduce, if possible, to some one uniform range of income. This may be taken indifferently at £1000, £100, £10, or £1. If £1000 were taken, each result would be simply a hundred times greater than if £10 be used. In the poor end of the table, it is necessary to consider separately each £10 increment from say £100 up to £200, and if the number of income holders per £100 range were tabulated for this part of the table where the variation is so rapid, the figure could be understood only as ten times that for £10 range. On the other hand, at the other end of the table, the number per £100 range gives as result a small fraction of one individual, which again has no meaning except when understood to be simply the 100th part of the number per £10,000 range. Thus, if a £1 range be taken and the numbers in column 4 be divided by the corresponding range in pounds, we arrive at a series of figures

giving a first approximation to the natural law of what may be called the Density of the Income Receiving Population at each level of income. The result of this division is shown in the fifth or last column of Table I, which has been added by the present writer.

The results have been plotted on a large-scale diagram as vertical ordinates against abscissae equaling the mean income over each range as given in Mr. Mallock's table. To the eye of the expert in diagram plotting the curve thus produced at once suggests a curve of reciprocals; not an hyperbola or curve of first power reciprocals, but one of reciprocals of either the square or the cube of the income. Employing another well-known form of logarithmic diagram, this same conclusion is confirmed.

Looking at the last column of this Table I, it is seen what an immense variation of this "income-density" exists. Between £115 and £150 it is $1\frac{1}{4}$ million times greater than between £10,000 and £50,000. If a natural law applies throughout, it can hardly be expected that the coefficients in the numerical expression of this law will be the same for all strata in the social aggregate.

To test the suggested law of the reciprocal of the cube of the income, each number in this last column is multiplied by the cube of the average income in the corresponding range. The resulting coefficients are placed below in

TABLE II

These density coefficients to be multiplied by 1000 million													
Range £	{	115	150	160	200	300	400	700	2,000	3,000	5,000	10,000	50,000
		150	160	200	300	400	700	2,000	3,000	5,000	10,000	50,000
Density Coefficient		200	168	202	63	81	76	230	294	432	658	361	2,330

It will be perceived that this analysis divides the whole range very sharply into four classes: namely (1) below £200, (2) between £200 and £700, (3) between £700 and £50,000, and (4) above £50,000.

Within each class the coefficient varies irregularly, and not more than might be expected for reasons already mentioned, especially if it be remembered that the figures have been arrived at by the use of false average incomes applied to each range.

In the third class the coefficient increases somewhat rapidly from £700 up to £10,000, then falls equally rapidly. Above £50,000 in the fourth class it once more reaches a much higher figure than previously. From £700 upwards it is found, in fact, that the law of the inverse $2\frac{1}{4}$ th power, instead of the inverse cube, produces less variation of this density coefficient, examples being 607, 809, 362, and 504; but this variation is equally erratic in general character. The purpose of the present paper being to find a sure and fairly easy method of income-tax calculation, and the calculations upon the $2\frac{1}{4}$ th power basis being much more difficult than those on the 3d power basis, it has been decided to adhere to this latter and to sectionize the range above £700 into three instead of two classes.

The adoption of any one law enables one to calculate the corresponding true average according to this law over any given range. For instance, by a simple process of integration, the law of the inverse cube leads to the following value of the mean income between any lower limit I_1 of income and any other higher limit I_2 ; namely, mean $I_m = 2 I_1 I_2 / (I_1 + I_2)$. If the aggregate of the incomes between these limits be known, the true value of the density coefficient

for that range can also be directly calculated. This inverse-cube law gives the value

$$\text{Density Coefficient} = n = I_1 I_2 \Sigma I_{1,2} / (I_2 - I_1)$$

where $\Sigma I_{1,2}$ means the above total of the incomes. This total multiplied by both upper and lower limits and divided by their difference (*i. e.* the range) gives the coefficient. It should here be specially noted that this coefficient is *not* the number of persons per £1 range: this number of persons equals the coefficient divided by the cube of the income.

In the following Table III the values of I_m and of n thus calculated from the totals given by Mr. Mallock are placed against each range in Mr. Mallock's table.

TABLE III
RECTIFIED AVERAGES AND DENSITY COEFFICIENTS

Range $I_1 - I_2$	Total $\Sigma I_{1,2}$	True Average I_m	Density Coefficient n divided by One Thousand Million	Number of Income Receivers
	Million			
£115- 150	£333	£130.2	164	2,558,000
150- 160	70	154.8	168	452,000
160- 200	250	177.8	200	1,406,000
200- 300	100	240.0	60	416,700
300- 400	66	342.8	79	192,500
400- 700	86	509.1	80	168,900
700- 2,000	207	1,037	223	199,600
2,000- 3,000	47	2,400	282	19,580
3,000- 5,000	54	3,750	405	14,400
5,000-10,000	67	6,667	670	10,050
10,000-50,000	40	16,667	500	2,400
50,000- 10^7	35	99,500	1760	352
Total	£1,355	.....	.....	5,440,500

The number of receivers of income as re-calculated from the corrected average is placed in the last column. These more correct averages being lower than those assumed by Mr. Mallock, the number of such receivers accounted for becomes greater, the total being 330,000 more than in Table I.

It will be noted that the variation of the density coefficient is now much more regular.

The most marked features are the sudden great drop at the limit £200; the equally sudden rise again at £700; and the further great sudden rise above £50,000.

There is little variation from £700 to £3000; and again no extreme variation between £3000 and £50,000, there being in this range a moderate rise followed by a fall.

The limits £200, £700, £3000, and £50,000 are therefore taken in what follows as dividing the whole range into five classes. The next table shows the coefficients worked out for these classes from the total incomes included within them.

TABLE IV
DISTRIBUTION OF INCOME IN FIVE CLASSES

Range $I_1 - I_2$	Total ΣI_{12}	Average I_m	Density Coefficient $\frac{n}{10^4}$	Number of, Income Receivers
£115- 200	Million £ 653	£146	176.7	4,473,000
200- 700	252	311	70.56	810,000
700- 3,000	254	1,135	231.9	223,800
3,000-50,000	161	5,660	513.9	28,440
50,000- 10^7	35	99,500	1,760	350
Total	£1,355	.....	.....	5,535,590

This analysis makes the number of persons receiving incomes over £115 a little higher, namely 95,000 more, than the last more detailed analysis. This is due to the shifting of the positions of the averages employed in the calculations.

It may here be observed that the above $5\frac{1}{2}$ million income receivers are generally reckoned to correspond to five times as many men, women, and children, or 27,678,000, since five is assumed as the average size of a family.

Mr. Mallock's figures go as low as £115 only because he fixed upon this limit as that below which all persons should be completely exempt from income tax. It is impossible that the law of inverse cubes should hold down to the lowest standards of living. It would mean the existence of innumerable hordes of half- or three-quarters destitute men. Evidently another forcible law comes into play at these low levels; namely, that it is impossible to live inside a not altogether savage human community on less than certain minima of means. Here it may be remarked that a mathematical "frequency" or density law which would more or less accurately cover the whole range including the lowest strata of destitution might be easily discoverable if the statistical data for it existed. But for the special purpose of the present article this complete law is unnecessary as it is impossible or at least undesirable to tax these lowest strata.

It may, however, be taken for granted that the same law as applies between £200 and £115 applies down to £100. This is the limit below which the present paper proposes to exempt every one from all taxation both direct and indirect. We round off the density coefficients in the direction of safety in estimating for income tax, and take the upper limit as ten million

pounds. The substitution of this upper limit for infinity, or any figure greater than ten million, makes no material difference in the calculated result.

These adjustments give the following classification of the taxable income of the nation set forth in Table V.

TABLE V
TAXABLE INCOME OF THE NATION

Range	Total Income	Average Income	Density Coefficient 10 ⁶	Number of Taxable Persons
	Million			
£100- 200	£880	£133½	176	6,600,000
200- 700	250	311½	70	804,000
700- 3,000	252	1,135	230	222,000
3,000-50,000	160	5,660	510	28,270
50,000- 10 ⁷	35	99,500	1,760	350
Total	£1,577	.....	.....	7,654,620

This number of persons, reckoning each to represent a family of five accounts for 38½ million of the population, leaving some five million, or one million families, with less than £100 income. This closely accords with the estimate generally made, the income being that of the whole family regularly and irregularly earned.

Before applying these data to an estimate of possible income tax revenue, it will be interesting to tabulate in greater detail this law of distribution of wealth. This is done in the following table.

TABLE VI
DISTRIBUTION OF INCOME

Range	Average	Number of Families per £1 Range	Aggregate Income per £1 Range	Range	Average	Number of Families per £1 Range	Aggregate Income per £1 Range
£100-120	£109.1	134,420	14,666,667	£1,000-1,500	£1,200	127.8	153,333
120-140	129.2	81,090	10,476,190	1,500-2,000	1,714	44.78	76,667
140-160	149.3	52,625	7,857,143	2,000-2,500	2,222	20.70	46,000
160-180	169.4	36,070	6,111,111	2,500-3,000	2,727	11.25	30,667
180-200	189.4	26,310	4,888,889	3,000-4,000	3,428	12.40	42,500
200-250	222.2	6,301	1,400,000	4,000-5,000	4,444	5.74	25,500
250-300	272.7	3,423	933,333	5,000-6,000	5,454	3.117	17,000
300-350	323.1	2,063	666,667	6,000-7,000	6,461	1.880	12,143
350-400	373.3	1,339	500,000	7,000-8,000	7,466	1.220	9,107
400-450	423.6	918	388,889	8,000-9,000	8,471	0.836	7,063
450-500	473.7	657	311,111	9,000-10,000	9,473	0.598	5,667
500-550	523.8	486	264,545	10,000-20,000	13,333	0.1913	2,550
550-600	573.9	369.6	213,121	20,000-30,000	24,000	0.0354	850
600-650	624.0	287.6	179,457	30,000-40,000	34,286	0.0124	435
650-700	674.1	228.3	153,846	40,000-50,000	44,444	0.00674	255
700-800	746.6	550.2	410,714	50,000-100,000	66,667	0.00638	363
800-900	847.1	277.1	319,444	100,000-200,000	133,233	0.00066	83
900-1,000	947.3	249.1	245,454	200,000-300,000	240,000	0.0001222	291
				300,000-400,000	342,857	0.0000428	144
				400,000-500,000	444,444	0.0000200	8.3
				500,000-1,000,000	666,667	0.00000528	2.23
				1,000,000-10,000,000	1,313,181	0.00000097	0.176

This table demonstrates very clearly the importance in the levy of taxation of going to the lowest level that may be deemed just, generous, and economically practicable. Because the £20 range from £100 to £120 yields $1\frac{1}{2}$ times as much aggregate income as the £20 range from £120 to £140; twice as much as the same range from £140 to £160; and thrice as much as the same between £180 and £200.

Remembering that an "average family" consists of two adults and three children ranging in age up to fifteen or sixteen, the following is an estimate of the minimum cost of living a physically and morally healthy life. Food, £54; clothing, £14; coal and firewood and gas, £6; rent, rates, and water, £15; furniture and household utensils, £3; holidays and amusements, £4; sickness, accident, and old age insurance, £4; total, £100.

This does not include the cost of schooling, now undertaken by the State and paid for out of rates and taxes; nor does it include the cost of any other public services, such as sanitation, roads, police, etc., except as included in rates. It includes a small item for sickness because hospitals are as yet only to a very small extent supported out of taxation and are largely financed by the voluntary contributions of the artisan classes; also a small item for old age because no one supposes that the present government old age pension (five shillings) is sufficient for the support of aged parents.

The taxation proposal now to be made is of the "free breakfast table" kind. It is clear that for the physical and moral welfare of the nation, it is not advisable to lay any compulsory taxes upon those whose income per family of five is below £100: espe-

cially when, as now, the term "taxation" is taken as excluding "rates." So long as "indirect" taxation is maintained as a means of compelling the poor to contribute to state revenue, it may be easily demonstrable that it is most economically levied upon tea, coffee, and sugar. But for that very reason, it seems clear that indirect taxation ought not to be relied upon for this purpose, because it is undeniably both unjust and cruel to increase forcibly the prices of what are real necessities of modern life to the women and children of the very poor. There is no such argument for abandoning indirect taxation of the luxuries of either poor or rich, such as wines, spirits, and tobacco.

Excluding these taxes upon luxuries, and the stamp and other like duties, the remainder of our present indirect taxation yields a revenue of roughly thirty million pounds, and the income tax roughly another thirty million. It is proposed to raise the whole of these sixty millions by a graduated income tax upon those having over £100 income per family. To go below this limit interferes with the possibility of physical and moral welfare, and is therefore unjust and inexpedient. So far as those with less than this income insist upon spending part of it upon taxed luxuries, the influence of taxation in restricting such expenditure is both just and also very desirable.

A practically perfect graduation of income tax may be expressed algebraically by the formula

$$\text{Rate of Tax} = \frac{M \times \text{Income}}{\text{Half Limit plus Income}}$$

$$\text{or } i = \frac{MI}{H + I};$$

where what is meant by H , or "Half Limit," is that income at which the rate becomes *half the ultimate*

rate which is not quite reached even with multi-millionaires, and where M means this ultimate rate slightly above that imposed upon multi-millionaires.

If the Half Limit be placed at £3000, Table V shows that this is just at the top of what may be called the rich middle class. It is not, of course, pretended that there are any perfectly sharp lines of demarcation between the five classes of Table V. Probably they overlap each other considerably. But the strikingly large differences discovered in the "density-coefficients" proves the real existence of six main classes in our society: (1) the very poor under £100; (2) the "artisan" up to £200; (3) the poor middle class up to £700; (4) the rich middle class up to £3000; (5) the very rich up to £50,000; and (6) the millionaires, so called because each enjoys as income a considerable fraction of a million pounds, their average being one tenth of one million. The Half Limit £3000 makes the rate of tax for £750 equal to $750/3750 = \frac{1}{5}$ of the ultimate rate; so that, for example, if the ultimate rate $M = 25$ per cent or 5s. per £1, that for £750 would be 1s. This £750 is just well clear of the somewhat unfortunate lower middle class who reach up to £700, and who cannot avoid many social expenses rather disproportionate to their means.

The ultimate rate M has to be fixed from year to year by the Chancellor of the Exchequer in proportion to the needs of the revenue. It can be varied in more or less exact proportion to these needs. The revenue levied upon each class and upon each individual varies with M in the same proportion for all; and the total state revenue yielded from income tax varies in the same proportion.

It has already been noted that ordinary integration from the law of inverse cubes gives the aggregate

income between the limits I_1 and I_2 equal to $\Sigma I_{12} = n(I_2 - I_1)/I_1 I_2$ for a constant value of the density coefficient n between these limits. For the whole of any one class throughout which a uniform value of n rules, a similar integration shows that the application of an income tax graduated in the above explained manner yields a revenue,¹

Income tax revenue between limits I_1 and I_2 equals:

$$2.3026 \frac{M n}{H} \log_{10} \left\{ \frac{(H + I_1) I_2}{(H + I_2) I_1} \right\}.$$

Table VII contains the result of applying this formula to the five classes already particularized for two examples of the value of M , namely twenty and twenty-five per cent.

TABLE VII
GRADUATED INCOME TAX REVENUE, WITH ULTIMATE RATE
20 AND 25 PER CENT.

Class Limits of Income	Density Coefficient 10 ⁶	Aggregate Class Income	Income Tax Revenue $M = 20\%$	Income Tax Revenue $M = 25\%$
		Million		
£100- 200	176	£880	£7,762,000	£9,702,000
200- 700	70	250	5,206,000	6,507,000
700- 3,000	230	252	14,902,000	18,628,000
3,000-50,000	510	160	21,586,000	26,983,000
50,000- 10 ⁷	1,760	35	6,802,000	8,503,000
Total	.....	£1,577 × 10 ⁶	£56,258,000	£70,323,000

¹ The factor 2.3026 appears here in consequence of the formula being adapted for use with common decimal logarithms instead of "natural" or "Napierian" logarithms. With $H = £3000$ and $M = 25$ per cent this becomes

$$\frac{0.1919}{1000} n \log_{10} \left\{ \frac{(3000 + I_2) I_1}{(3000 + I_1) I_2} \right\}.$$

The value of the Ultimate Rate M which would yield approximately sixty millions revenue is 21.33 per cent. The average rate upon 1577 million pounds that would yield sixty millions is 3.8 per cent.

If the Half Limit H were made less than £3000, the general effect would be to levy a proportionately larger share of the total burden from the poorer classes. To appreciate in more precise manner the effect upon Total Income Tax Revenue of varying H , the simplest theoretic possibility may be assumed by way of illustration: namely, that the whole range from £100 to ten million pounds is governed by one and the same uniform density coefficient. If then we use Q as contraction for

$$\frac{2.3026}{H} \log_{10} \left\{ \frac{H + 100}{H + 10^7} \cdot 10^8 \right\} = Q$$

$$= \text{very nearly } \frac{2.3026}{H} \log_{10} \left(\frac{H}{100} + 1 \right).$$

We have

$$\text{Aggregate Income Tax Revenue} = M n Q.$$

The following Table VIII gives the values of the function Q between these limits 100 and ten million for values of H up to 10,000. For arithmetical convenience the values of Q are given as multiplied by one million.

TABLE VIII

AGGREGATE INCOME TAX REVENUE = $M n Q$

£ H $Q \times 10^6$	1,000	2,000	3,000	4,000	5,000	6,000	8,000	10,000
	2,397.9	1,522.0	1,144.5	928.3	786.2	685.0	549.2	461.4

To give the aggregate income of 1355 million pounds between limits £115 and ten million pounds as found by Mr. Mallock, the appropriate uniform Density Coefficient is 155,800 million. This multiplied by the above gives

TABLE IX

AGGREGATE INCOME TAX REVENUE FOR UNIFORM $n = 1558 \times 10^3$.
MILLION £S TO BE MULTIPLIED BY ULTIMATE RATE M

$H \text{ £}$	1,000	2,000	3,000	4,000	5,000	6,000	8,000	10,000
$nQ + 10^4$	373.6	237.1	178.3	144.6	122.5	106.7	85.57	71.88

Thus if the Ultimate Rate were 20 per cent, the total yield would be 74.72 million pounds with Half Limit £1000; but only 35.66 million, or less than half as much, with Half Limit placed at £3000; and no more than $24\frac{1}{2}$ million if it were placed at £5000.

This table is given only to illustrate the broad effect of changing the Half Limit. We have found above that the Density Coefficient is actually very far from being constant, and its changes from class to class result in very materially different proportions than those shown here in Table IX.

To show how the rate of the tax imposed increases with the income in the most general manner the following Table X is given, where the ratio of the tax-rate on any income to the Ultimate Rate is coördinated with the ratio of the corresponding income to the Half Limit income. That is, i/M is coördinated with I/H .

TABLE X

$\frac{I}{M}$	.03	.04	.05	.06	.07	.08	.09	.10	.11	.12	.13
I/H	.0309	.0416	.0526	.0638	.0753	.0870	.0990	.1111	.1236	.1363	.1495
$\frac{I}{M}$	.14	.15	.16	.17	.18	.19	.2	.21	.22	.23	.24
I/H	.1628	.1764	.1904	.2045	.2195	.2345	.2500	.2658	.2821	.2987	.3158
$\frac{I}{M}$	.25	.275	.3	.325	.35	.375	.4	.425	.45	.475	.5
I/H	.3333	.3793	.4286	.4815	.5385	.6	.6667	.7391	.8182	.9048	1
$\frac{I}{M}$	.525	.55	.575	.6	.625	.65	.675	.7	.725	.75	
I/H	1.105	1.222	1.353	1.5	1.667	1.857	2.077	2.333	2.636	3	
$\frac{I}{M}$	.775	.8	.825	.85	.875	.9	.925	.95	.975	.98	.995
I/H	3.444	4	4.714	5.667	7	9	12½	19	39	49	65½
										99	199

To illustrate this graduation further, the next Table XI gives its results if the Half Limit be £3000 and the Ultimate Rate 20 per cent.

TABLE XI

$$H = £3000 : M = .2$$

I	100	120	140	160	180	200	250	300	400	500
i	.0064	.0077	.0089	.0101	.0113	.0125	.0154	.0182	.0235	.0286
I	600	700	800	1,000	1,250	1,500	1,750	2,000		
i	.0333	.0378	.0421	.0500	.0588	.0667	.0716	.0800		
I	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000		
i	.1000	.1143	.1250	.1330	.1400	.1454	.1500	.1538		
I	15,000	20,000	30,000	40,000	50,000	100,000	200,000	500,000		
i	.1667	.1739	.1818	.1860	.1887	.1942	.1970	.1988		

If the Half Limit H were well chosen at any one date, there would be no rational ground for changing it for a long period; not until the general condition of society and the financial relations between the

various classes of society had undergone substantial change.

It is nevertheless of interest to inquire what effect change in H has upon an individual income tax at any given level of income. From the remarks already made it is clear that lessening H means a larger total revenue from taxes with any given ultimate rate M , and also means raising the ratio of the tax-rate on any income I to this Ultimate Rate M throughout the whole scale of I . But it raises it in different proportions at different parts of the scale; relatively less at the top and relatively less at the bottom. And since only a definite prescribed revenue is required, such lowering of H would permit of lowering M also. Does the decrease of M compensate for the increase of proportion of i to M ; or when does it do so and when the reverse?

Let the prescribed revenue required be called R . Then the formula already given shows that the needful Ultimate Rate $M = R/nQ$. Now on any income I the tax is levied at the rate

$$i = M \left/ \left(1 + \frac{H}{I} \right) \right. = \frac{R}{n} \left/ \left(Q + \frac{QH}{I} \right) \right.$$

Reference to Table VIII shows that increase of H decreases Q but increases QH . If the decrease of Q be greater than the increase of QH/I , then the increase of H will also increase i . Now the increase of QH/I is inversely proportional to I . So that for I greater than a certain limit, the negative change in Q must be greater than the positive change in QH/I , and the effect is to increase i . For incomes below this limit increase in H will decrease i .

This result is worthy of careful observation. A numerical illustration will make it clearer. Compare

$H = 1000$ with $H = 2000$ at the two income levels £500 and £2000. Taking the figures for Q from Table VIII, we find:—

$$\text{For } I = £500 \text{ with } H = 1,000; i = \frac{R}{n} / (2,398 + 4,796) 10^6 = \frac{R}{n} / 7,194 \times 10^6;$$

$$\text{For } I = £500 \text{ with } H = 2,000; i = \frac{R}{n} / (1,522 + 6,068) 10^6 = \frac{R}{n} / 7,610 \times 10^6;$$

$$\text{For } I = £2,000 \text{ with } H = 1,000; i = \frac{R}{n} / (2,398 + 1,199) 10^6 = \frac{R}{n} / 3,597 \times 10^6;$$

$$\text{For } I = £2,000 \text{ with } H = 2,000; i = \frac{R}{n} / (1,522 + 1,522) 10^6 = \frac{R}{n} / 3,044 \times 10^6.$$

At the lower income £500 the change from Half Limit £1000 to £2000 has decreased i by $5\frac{1}{2}$ per cent. At the higher income £2000 the same change has increased i by 11.8 per cent.

By applying the ordinary rules of differentiation to this problem, it may be proved that increase of H produces increase of i when I is so great as to make

$$H/I \text{ less than } \left\{ \left(1 + \frac{100}{H} \right) \log \left(1 + \frac{H}{100} \right) - 1 \right\}.$$

Here the natural or Naperian logarithm is used, and, if the decimal logarithm be used, then the logarithm on the right-hand side of the equation must be multiplied by 2.3.

For all incomes less than this limit, the rate i is lessened by increase of H .

Take as example $H = £3000$; then the right-hand side of the above equals $1\frac{1}{2} \log 31 - 1 = 2.548$, and for incomes greater than $3,000/2.548 = £1177$, an increase of H above £3000 increases the income tax, while for incomes less than this such increase of H diminishes the tax on individuals. These limits are for

$H = £$	1,000	2,000	3,000	4,000	5,000	6,000	8,000	10,000
Limit = £	650	910	1,177	1,425	1,661	1,887	2,319	2,731

One other point as regards graduation of income tax is worthy of careful consideration. At present the successively higher rates rise by sudden steps of large magnitude. The result is that anywhere near each limit where the rate steps upwards there is an almost irresistible temptation to understate one's income, because the man just £1 under the limit is very largely better off — is left with a larger remainder after payment of the tax — than he who is just £1 over the limit. This is a ridiculously unjust result. Probably a stepped schedule of rates is a practical necessity for the revenue office. It should be accompanied by a schedule of steps of income, differences less than such steps of income being ignored by the surveyors: an excess of income above each limit less than the step being exempt from tax.

If at any limit in such a stepped schedule the tax rate be i and the succeeding step be Δi ; that is, the next scheduled rate be $i + \Delta i$; while the income is I and the income step not subject to tax be ΔI ; then those that pay on an income $I + \Delta I$ at the rate $i + \Delta i$, will be left no worse off than those that pay on I at the rate i , if $\{I + \Delta I\} \{1 - i - \Delta i\}$ be greater than $I(1 - i)$. Omitting minute quantities, this means that the income increment which should be ignored in respect of tax, ought to be

$$\Delta I \text{ greater than } \frac{I}{1 - i} \cdot \Delta i.$$

The steps Δi in the rate should be as small as may be considered convenient for revenue office calculation, and the steps of ignored income adjusted according to this formula.

Thus if on income £750 the tax be 5 per cent, and if the next higher scheduled rate be .052; then $\Delta i = .002$,

and on $\Delta I = \frac{750}{.95} \times .002 = £1.58$ —say £1, 12s. 0d. no tax should be charged. But if the rate were stepped from .05 to .055, then $\frac{750}{.95} \times .005 = £3.95$, or say £4, should be exempt.

Again if at $I = £4,500$, the rate be $i = .15$ and the next higher rate be .152, then any excess above £4500 up to $\Delta I = \frac{4500}{.85} \times .002 = £10, 12s. 0d.$ should be exempt. That is to say that the man whose income is £4510 should be taxed at the rate .152 upon £4500 only.

Many persons prefer the system of "abatements" or "allowances" upon the income taxed rather than graduation of rate of tax. Any continuous formula for graduation of rate may be alternatively expressed as one for "abatement" of income to be taxed at a uniform rate. The rule here recommended, namely, Rate of Tax equals $MI/(H+I)$ is easily seen to be equivalent to an abatement equal to $HI/(H+I)$ on the income I , the remainder to be taxed at the full rate M . This is perhaps a more soothing manner of expressing the formula, especially as the magnitude of the abatement always rises with the income, instead of decreasing as our present clumsy schedules of abatements make it. But it rises, of course, at a decreasing rate: the rate at which it rises with the income itself is the square of $H/(H+I)$. The amount of the tax to be paid on any income I is $MI \left(1 - \frac{H}{H+I}\right)$. When the income equals the

"Half Limit," the abatement equals half the income.

Finally it may be pointed out that if, in order to encourage the now growingly unpopular institution

of marriage, the total income of a man and his wife were to be reckoned for taxation purposes as two equal incomes of two persons, then the limit below which incomes were exempt from taxation would need to be reduced from £100 to £50 and besides this either M would need to be raised or H diminished in order to realize the same total revenue.

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ECONOMIC HISTORY AND PHILOLOGY

SUMMARY

Mistakes of economic history and of philology when dealing with origins, 240. — Philology cannot be dissociated from economic history, 241. — Evidences of early importation of steel from China, 242. — Weighing machines probably introduced from China, 245. — The origin of the tartan manufacture in Central Asia. The evidence thereof in the languages of Europe, 246. — The fallacy of the Garbo wool and cloth theory of the economists, 252. — Garbo applied to another textile than woolens, 255. — Garbo parchment, 256. — Garbo identified with the goat, 258. — Garbo an expression for A 1, 259. — Fallacy of the economic theory as to the origin of the grocer, 261. — What constituted "retail" in the early Middle Ages, 262. — The relation of "retail" to "wholesale," 264. — Analysis of the Ordinance of the Fishmongers of Amiens for this relation, 266. — The grocer more nearly a commission merchant, 267. — Genesis of the English grocer. Ordinances for weighing "goods of weight," 271. — The grocer so called from selling "grosses," 273. — The grocer not so called from engrossing commodities, 274. — The spicerers and grocers of Byzantium, the prototypes of the Italian and, hence, of the English spicerers and grocers, 275. — Origin of the word "spices," 276. — Origin and meaning of the word "avoir du pois," 277.

IN dealing with origins the writers of economic and historical subjects are wont to proceed from the data of the philologist, tacitly assuming that the science of words is based on immutable foundations and that they cannot take upon themselves the responsibility of an empiric investigation where etymology has once for all determined the facts by philosophic deductions and mechanical laws. But, by making light of the chronological element and by creating the somewhat arbitrary divisions of families of languages, philology is led to underrate the importance of the great trade routes, the geographic advance of civilization, the

constant and endless interaction of custom, tale, and invention, which run counter to the families of languages and know not of individual tongues; and hence it has not furnished the proper material for the history of the economic development and cannot serve as a check on the historic method.

Philological activity has reduced itself to a number of specialized fields which, tho useful from the standpoint of mere classification, are contrary to historic facts. We may speak of Germanic, Romance, Classical, Indo-Germanic languages, but these subdivisions exclude conditions which find no place in the narrowed compass and, on the other hand, accentuate resemblances which are either accidental or have entered from without. There never was a Germanic, or Indo-Germanic, or Romance community or civilization. The historic evolution of Spain is quite different from that of Italy or Roumania, and there never was a time when the linguistic stock of these three was one and undivided. From the very start there were enormous differences, and if we proceed from the common Latin, we no longer have the substratum of Spain, Italy, or Roumania, but only a faint background on which the Iberian and Goth, Roman and Langobard, Dacian and Slav, have independently evolved themselves; and an entirely unrelated language, such as Hungarian, may as much represent the influence of the Roman civilization as does Latin Roumanian.

What has happened within historic times happened in prehistoric. Through the mixture of an original Indo-Germanic language at very different periods with very different linguistic stocks have arisen the many tongues which, by courtesy, we still denominate Indo-Germanic, even as, by discourtesy,

an octaroon, who has but one-eighth of negro blood in him, is called a negro. Hence it is absurd to predicate an Indo-Germanic or even a Germanic civilization, any more than one would think of establishing an "Urgeschichte" of Romance. It is only because the former are removed from documentary control that philologists have ventured on voluminous "Prehistoric Histories," while their statements in regard to historic times upon proper investigation as often prove wrong as right.

Philology cannot dissociate itself from the history of civilization in the treatment of the origin of words, for words are carried along roads of communication with the things which they represent, and it is idle to speculate on any prehistoric history until all the roads of communication have been traced and mapped out. These prehistoric histories base their conclusions on the universality of certain words in a linguistic group, but this is no more indicative of the presence of the things represented by these words in the original stock from which the group is derived than the universal use of the word "automobile" is indicative that the aborigines of Europe had invented this machine, just as the absence of a common word for "hand" cannot lead to the conclusion that the Indo-Germanic primitive man had not yet emerged from the quadruped stage.

I will illustrate the topsy-turviness of the philological method, as commonly practised,¹ by a few words of economic import which have, like all such words, emanated from great trade centers and have travelled along the customary trade routes, with little heed to linguistic affinities. The name of such words is

¹ The publication of a new periodical, *Wörter und Sachen*, by Meringer, Meyer-Lübke, and others, is a ray of light in a field of darkness.

legion, but the few treated here will suffice to indicate the path along which philology must walk, if it is to save itself from inanity, and to accentuate the close union which must subsist between philology and economic history. The two are inseparable wherever they overlap.

RELATIONS WITH CHINA

Schrader¹ gives a list of names for "steel" related to Persian *pulad*; Syriac, *płd*; Kurdish, *pila*, *pola*, *pulad*; Pehlevi, *pōlāwat*; Armenian, *polovat*; Turkish, *pala*; Russian, *bulat*; Mizdzhegan, *polad*, *bolat*; Mongolian, *bolot*, *būlāt*, *huriāt*. He is unable to suggest an origin for these words. Fr. Müller² pointed out that the Pehlevi and Armenian should be *pola-pat* and suggested Greek *πολύπαραξ*, much-beaten, as the original word. A number of mistakes were thus committed. In the first place, it was not right to limit the words to their Indo-Germanic form and, therefore, suggest a Greek root-word. Secondly, *πολύπαραξ* could not under any conditions be connected with steel, because steel is the result of the carbonization of iron, and the much-beating is later applied to it as much as to copper, iron, gold, etc.; and, chiefly, because there is not a particle of evidence that the Greeks ever used the word as a designation for steel. Thirdly, not all the countries of Asia had been exhausted in search for similar names, and so the possible center of issue was dislocated. For, by adding Tibetan *p'olad*, Sulu *balan*, Tagalog *patalim*, Ilocano *pāslip*, we at once see that the origin of the word may lie further to the east. Naturally

¹ Sprachvergleichung und Urgeschichte, Jena, 1883, p. 287.

² Wiener Zeitschrift für die Kunde des Morgenlandes, vol. v, p. 186.

one thinks of China as the possible point of issue, for there steel was known in the third millenium before our era and we have the positive reference to steel in a Chinese writer of the fifth century B.C.¹ However, a perusal of the Chinese dictionary fails to furnish the word needed, for *kang* cannot lie at the foundation of *pūlād*. The difficulty is at once removed by inquiring into the chief use of steel in China. We learn that the most important article made from it is the flintsteel, which "every Chinaman, as a true Mongol, always carries with him."² Now flintsteel is in Chinese *hwo-lien*, in the Cantonese dialect *fo-lim*, literally "fire-sickle." The ancient pronunciation can only be guessed at. Tho given as *ho-liem*, *ha-liem*, *hwo-liem*, the final consonant may have been less sonant and understood by hearers as a *b* or *p*, hence, while this *fo-lim* is rendered in Tagalog as *patalim*, in Sulu as *bālan*, Ilocano gives it as *pāslip*. The variant rendering of the first part is due to the wide, open pronunciation of *fo*.

I have no hesitancy in adding Greek *χαλυσ*, *χαλύβδιον*, steel, to this group. The assumption, already expressed by the Greeks, that *χαλυσ* was so called from the *Χάλυβες*, the nation near the Pontus, who mined iron and from whom the iron for their steel was obtained, only indicates an attempt to explain the origin of the word, in the light of the fact that their iron was received from the East, or, what is also probable, the name of the Eastern nation from whom they received their iron was so changed as to bring it in harmony with the *χαλυσ*, which originally was derived from China, even as the Greeks

¹ L. Beck, *Die Geschichte des Eisens*, Braunschweig, 1884, vol. 1, p. 294 ff.

² *Ibid.*, p. 299.

named the Chinese Σήρες, from σήρ, the silk-worm, which is from Chinese *sze*, silk. That the inhabitants of the Philippine Islands and the Mongols should have derived their flintsteel from China is natural enough, and, indeed, life in the Mongolian steppes would have been impossible without this manner of striking fire, which had been in practice in China since the most remote antiquity, because of the absence of firewood. But it does not follow that all the words adduced by Schrader are directly to be derived from the Chinese. The Armenian and Pehlevi *polapat* go back to the ninth century and are older than *pūlād*, or rather *fulād*, the Persian form, to which most of the derivatives are related. The steel from Khorasan was famous in the Middle Ages, and it is, therefore, possible that the Mongolian and Tibetan words are formed from the Persian, but the Armenian and Pehlevi words, which may go back to an older *folapt*, bear such a striking resemblance to Greek χαλύβειον that it is difficult without more evidence to say whether the Greeks derived the word from the immediate East or vice versa. At the same time Greek χαλυβ- in pronunciation so much resembles Old-Chinese *ha-liem* that one feels inclined to assign to it a priority. Judgment must here be suspended until the investigation by sinologues may cast some new light on the early relations of China with the West.¹

Meanwhile I shall attempt to trace a few more commercial products to China. The steelyard and balance had been in use in China milleniums ago,

¹ There is nothing new in the assumption of Greek relations with China. They have been pointed out by A. Gladisch (*Die Hyperboreer und die alten Chinesen*, Leipzig, 1866) and Hepke (*Die kulturgeschichtlichen Beziehungen der alten Chinesen und der Hellenen*, in *Verhandlungen der Gesellschaft für Erdkunde zu Berlin*, vol. vi, pp. 171-186), and B. Laufer (*Die Sage von den goldgrabenden Ameisen*, in *Toung Pao*, série II, vol. ix, pp. 429-452) has shown that the gold-digging ants of Herodotus are not a mere myth, but point to a commercial relation between Greece and the extreme East.

but unfortunately I know of no treatment by modern writers which would explain the use of the various weighing machines mentioned in the Chinese dictionaries. Such a treatise, I am sure, would clear up many complex problems of mediaeval European trade. What I offer here is only tentative, a mere exposition of method, and not a final solution. The Chinese name for the balance is *tên-ping*, which appears in Annamese *thien-binh*, Japanese *tempin*, *tembin*, Malay and Sulu *timbāng*, Tagalog *timbang*; that is, it is known to the whole extreme East. The Annamese has also the form *can-thang-bang*, generally applied to the steelyard, where *can* is identical with Chinese *kin*, a utensil for determining the weight of a thing, *thang* is Chinese *tāng*, small steelyard for weighing money, *bang* is the same as Chinese *ping* in *tên-ping*. An older shorter *can-thang* must be assumed by the side of Chinese *le-tāng*, a balance for weighing money, and this is unquestionably the origin of Hindustani *kāntā*, small goldsmith's scale. This Hind. *kāntā* cannot be derived from Arab, *qantār*, on account of the difference in spelling, and Arab. Turk. *qantār* (Greek *κavτάρι*, Albanian *kandar*, the large steelyard) has apparently arisen from a confusion of the Eastern term with Low Latin *centenarium*, Greek *κεκταρίον* a hundredweight.¹ There is in

¹ There are other Arabic words which are ultimately derived from Chinese. One of the most important Arabic words introduced into mediaeval trade is *saṣṣar*, broker, generally known in the Italicised form *saṣsal*. It has been pointed out that this Arabic word is originally Persian, but it cannot be explained from any Persian root-word. Besides, we have no record of any advanced commercial enterprise originating in Persia, which only acted as an intermediary between the East and West. This Persian *saṣṣar* is nothing but Chinese *chingchi*, broker, from *ching* (*king*), a person through whose hands an affair passes and *chi* (*tsi*), to record. The Arabs began to trade with China in the beginning of the seventh century (A. von Kremer, *Culturge-schichte des Orients unter den Chalifen*, Wien, 1877, vol. II, p. 280), hence it is not unlikely that many Arabic words of Chinese origin were directly derived from China. On the relations between the Arabs and the Chinese, see E. Bretschneider, *On the Knowledge Possessed by the Ancient Chinese of the Arabs and Arabian Colonies, and other Western Countries, Mentioned in Chinese Books*, London, 1871.

Chinese an older name for the steelyard, the classical *keuen-hǎng*, from *keuen*, poise, and *hǎng*, the beam placed transversely, and a later one, *heng ping*, which in the older pronunciation sounded very nearly *keng-pang*. One of these forms is responsible for Persian *kapān*, whence it was taken into Arabic *qabbān*, steelyard, and Greek *καμναρός*, steelyard, which is for the first time mentioned in the fourth century. It thus seems that the oldest dissemination of the word and thing was by the way of Persia, a somewhat later one by the way of India, and a more modern one in the extreme East.

That silk and silk wares were exported from Asia to Europe and that the Chinese traded with the West at least 1000 B.C. are well-established facts, and it can be shown that at least one product of the European looms of the twelfth century originated — who knows how far back? — in Central Asia, whither it was at a still earlier date brought from China. In the Middle Ages there was known in Europe a cloth *tiretaine*, which with the *burel* and *burnet* belonged to the most popular products of West-European manufacture. Let us see what information one can gain on the matter from the most approved and scientific dictionaries. Hatzfeld and Darmesteter, in their French Dictionary, inform us that it seems to be derived from French *tirer*, to pull, and that it was a kind of cloth, half linen, half cotton. Monlau¹ thinks Spanish *tiritaña* is older than French *tiretaine* and that it is derived from the verb *tiritar*, to tremble with cold, on account of the rustling sound which it makes, or from English *tartan*. These are the kind of etymologies that my janitor indulged in when he looked at the radiator and called it a "ready heater."

¹ Diccionario etimológico de la lengua castellana, Madrid, 1881.

We turn to the *Oxford English Dictionary*, the great repository of quotations and etymological blunders, and find under *tartan*: "It has been conjectured to a. Fr. *tiretaine* (1247 in Godef. *Compl.*) 'a kind of cloth, half wool, half linen or cotton,' for which a variant *tertaine* is quoted in Godefroy of date 1487. . . . Another conjecture would identify the cloth with that called *tartar* or *tartarin*, of which the 16th c. forms *tartarne*, *tarterne*, somewhat approach *tartane*. But the quotations for *tartar* and *tartarin* point to a richer and more costly cloth." Under *tartar* we read: "OF. *tartare*, *tartaire* (c. 1300 in Godefroy), Med. L. *tartarium*, *tartareus* (pannus) 'cloth of Tartary,' a rich kind of cloth, probably silk, used in 15th and 16th centuries . . . *tartariums*, Colonel Yule believes, were so called 'not because they were made in Tartary, but because they were brought from China through the Tartar dominions.' "

Absolutely no conception can be formed of what the mysterious cloth was, where it came from, or of what economic import it may have been. We seek for information in Francisque-Michel,¹ but with little more success. To judge from the quotations given by him, *tartare* or *tartaine*, *tartara*, *tartariscus*, etc., was some kind of striped material, of which silk was the main ingredient, and which was sometimes worked with gold, and he did not hesitate to announce that *tartare* may have been applied in the European factories to an inferior article, on account of the sensation produced by the silk product.² Francisque-Michel almost guessed correctly, and had he proceeded to expand his investigations to the whole of Europe, he

¹ *Recherches sur le commerce, la fabrication et l'usage des étoffes de soie, d'or et d'argent et autres tissus précieux*, Paris, 1854.

² *Ibid.*, p. 167 ff.

undoubtedly would have ascertained the true state of affairs. The exclusive treatment of a word as French or Spanish cannot lead to the truth, and even the history of the thing can lead to no results so long as the historian is satisfied with the philologist's method of drawing his conclusions chiefly from library references. The fact is reversed. Only after a word has had its run in the mercantile, industrial, and civic life does it enter literature, and the treatment of the same by poets and historians reflects only what it was thought to be at the period of such mention, not what it originally was or even continued to be in every-day use. To ascertain the origin and meaning of *tiretaine* and its possible relation to *tartan*, *tarletan*, *tartarin*, we must first of all discover from a vast number of references what the underlying chief connotation of *tiretaine* was. Only then shall we be entitled to philological and economic assumptions. For purpose of geographical convenience I shall proceed from the west to the east.

In Portugal *tiritana* and *tricana* are a coarse woolen overcoat worn by peasants of Coimbra, but some give it as a kind of petticoat, also a countrywoman, whereas in Spain *tiritaña*, *tiritaina* is a kind of silk, but *tiritaina* also means "a thing of little value." Cotgrave says of French *tiretaine* "linsie-woolsie, or a kind thereof, worne ordinarily by the French peasants." In 1253 there is mention of a manufacturer of *tiretaines* as *tiretier*.¹ It is generally mentioned together with *galebrun*,² of which it was some kind of a variety. In the Vaudois country *tredaina* is a coarse cloth

¹ "Et se tiretier tissoit tiretaine ki ne fust boine et loiale et ri n'eust deux aunes de largece en ros. (Bans des tiretaines, de 1253), in Jaubert, *Glossaire du centre de la France*, Paris, 1864, sub *tiretier*.

² *Le livre des métiers* d'Étienne Boileau, by Lespinasse and Bonnardot, in *Les métiers et corporations de la ville de Paris*, Paris, 1879, p. 274.

made of native wool,¹ in Geneva it is *tredaina*, *trépelanna*, and at Lausanne *tredon*, *tredan* means "noise, tumult." In the Languedoc we find *tirintin*, throughout the Provence *tirantèino*, *tirlantèino*, *tirlintèino*, *tirangèino*, *tinteino*, *tiratagno* in the sense of *tiretaine* or cloth of a poor quality, *tarlatano*, *tarlantano*, *tarlatan*, cloth of poor quality, *tridagno*, *tridaino*, *tridèino*, cloth of poor quality, rags.² In Italy, *mezzalana*, "any woollie, or linsie-woollie stuffe, half wool and silke, or linnen,"³ seems exactly to correspond to our *tiretaine*, and the term seems to have taken the place, as a popular and correct rendering of what was called *tuttalana*. This *tuttalana*,⁴ sometimes called *tuttalana bassetta*, was no more of pure wool than some of our "all-wool" products, and is in all probability a corruption of some such word as *turtuna*, even as *tredaina* has in Geneva been corrupted into *trépelanna*, as *tiritana* has in Portugal been changed into *tricana*, and, as I suspect, French *tricot*, for the first time mentioned by Cotgrave as a term at Orleans, is but a corruption of the same *tiretaine*. To this aspect of the word I hope to return at some future time.

In Holland *tiereteyn*, *dierteyn* is given as an equivalent for burel.⁵ In High German it is recorded from the fifteenth century on as *dirdenday*, *diradey*, *dirledey*, *dirmadey*, *dermentey*, *dirdumdey*, *dirtmedey*, *dilmedey*, coarse cloth, half flax, half wool, a mixture of corn and barley, hodge-podge,⁶ but in Lower Germany it is

¹ D. Bodel, *Glossaire du patois de la Suisse romande*, Lausanne, 1866.

² Mistral, *Dictionnaire provençal-français*.

³ Florio, *Queen Anna's New World of Words*, London, 1611.

⁴ "15 brachia *tuctalani* Florent. coloris Persi," R. Davidsohn, *Forschungen sur Geschichte von Florens*, III. Theil, Berlin, 1901, p. 73.

⁵ "Vestis lino et lana confecta . . . burellum." Kilian, *Etymologicum teutonicæ linguae*.

⁶ Schmeller, *Bayerisches Wörterbuch*.

recorded from the fourteenth century on as *tirletei*, *derdendei*, *trittendei*, *tirumtei*, and in Ulm *durendei* is the nickname for an awkward fellow.¹ Amazing is the effect of this word upon the Russian language. It does not seem to be recorded as an appellation for cloth, but has become the foundation for the common designation of "fool" and "bad." The popular forms under which the word for "fool" occurs in Russia show that they owe their origin to the German traders in the north. These popular forms are: *duraley*, *duranday*, *durandas*, *durynda*, *durašman*, *duren'*, and the last is also the common word for "fool" in Polish. Out of these variant forms have arisen the literary words *durak*, fool, and *durnoy*, bad. No other Slavic languages have any derivatives from this stem.

All the above-mentioned words obviously arise from one ground form which must be able to produce the following meanings: (1) striped cloth, (2) linsie-woolsie, and silk, (3) mixture, hodge-podge, racket, nonsense. As the tendency in the manufacture of the Middle Ages usually was towards the deterioration of goods, a striped mixture of silk with some other substance would be the material which would satisfy all the above-mentioned conditions. This we find in Manchu *turtun*, étoffe crêpée,² Mongol *turtum*, a stuff woven from silk and camel hair,³ and these are from Chinese *ch'e-tseu*, literally silk-gauze or silk-hemp.⁴ The deterioration to a linsie-woolsie at once connects Portuguese *tiritana* with Scotch *tartan*, which is the same kind of striped goods, and it will be observed

¹ Schiller und Lübben, *Mittelniederdeutsches Wörterbuch*.

² Amyot, *Dictionnaire tartare-mantchou français*, Paris, 1789, vol. II, p. 325.

³ K. Th. Golstunski, *Mongol'sko-russki slovar'*, S. Peterburg, 1896, vol. III, p. 168.

⁴ For a fuller treatment of *burels* see my article *Materialien zu einer Geschichte der Kleidung im Mittelalter*, II, in *Revue de linguistique*, 1911.

in the costumes of the Middle Ages that peasants are frequently represented in checkered garments. On the other hand, the mixture of silk and wool or silk and hemp accounts for the muslin of poor quality called *tarlatan*. In its capacity of striped silk goods of a better quality it became responsible for the silks striped with gold which are several times mentioned in Francisque-Michel's quotations.

We must still account for the presence of an originally Eastern manufacture in the European factories of the thirteenth century or even earlier. *Tiretaine* formed so important a part of Cologne manufacture in the fourteenth century that the manufacturers, called, as in the French of the thirteenth century, *tyrteyer*, maintained a guildhall of their own known as *tirtey-huyss*,¹ and it was, in all probability, produced in Mayence in the twelfth century, to judge from its association with *galebrun*, which certainly was a product of Mayence looms at that time. It was, in the twelfth century, imported into Montpellier under the name of *tiretum* and taxed like *cendatum*.² But Mayence must have been in close relations with Turkestan even earlier than the eleventh century, to judge from the large number of Samarkand silver coins of the early part of the tenth century and the many Eastern wares found there by an Arab traveller.³

¹ W. Stein, Akten zur Geschichte der Verfassung und Verwaltung der Stadt Köln im 14. und 15. Jahrhundert, Bonn, 1895, in the Vocabulary.

² "De tireto et cendato, II den." Liber instrumentorum memorabilium, Montpellier, 1884-86, pp. 408 and 438.

³ Ch. M. Fraehn, Beleuchtung der merkwürdigen Notiz eines Arabers aus dem XI. Jahrhundert über die Stadt Mains, in Mémoires de l'académie impériale de sciences de Saint-Petersbourg, VI. série, sciences politiques, histoire et philologie, vol. II, p. 87 ff.

GARBO WOOL

"In antiquarian and topographic works on the history of Florence," says Doren,¹ "and in general philological discussions the word *garbo* has played an important part, especially in the Florentine literature of the sixteenth century: a mass of sagacity and learning, but also much fancifulness and arbitrary commenting has been wasted on its explanation and on its vicissitudes. Like a red thread there passes the same error through all these expositions, and this error is closely connected with the history of our industry. . . . If one goes back far enough, *garbo* is the Italian designation for the Sultanate Algarve in the west of modern Portugal, from which, as we saw before, the finest of cloths, manufactured by the Arabs, was in early times imported to Italy: a small street even then received its name from the sale of this cloth, and a family was named *del Garbo* from this street or, perhaps, because it chiefly busied itself with the importation of these stuffs. Finally, the name *Algarve* clearly is derived from Arabic *garbi*, western, since that Sultanate designated the extreme west of all the Arabian realms of the Mediterranean."

That "as we saw before" is not based on any historic proof, but only on a reference to Davidsohn.² If we now turn to Davidsohn,³ we find the following: "How extensive the Florentine trade with Algarvia cloth was in the beginning of the thirteenth century is

¹ A. Doren, *Die Florentiner Wollentuchindustrie vom vierzehnten bis zum sechzehnten Jahrhundert*, Stuttgart, 1901, vol. 1, p. 65 f.

² *Ibid.*, p. 22.

³ R. Davidsohn, *Geschichte von Florenz*, Berlin, 1896, vol. 1, p. 793.

evidenced by the fact that the street where it was located was called the *Garbo* even then, it having preserved the name until recent times, and that among the customers of a banker, of whose ledgers of the year 1211 chance has saved for us a few pages, no branch of business is more frequently mentioned than that of the merchants of the *Garbo*." Thus we move in a vicious circle: "The cloth came from Algarve, consequently it was called de Garbo," and "the wool was called de Garbo, consequently it came from Algarve." The confusion is increased by Schulte¹ who identifies *Garbo* with *barbaresca* and has it come from northwest Africa. Thereupon Davidsohn took Doren's part² and tried to prove that *Garb* originally referred to southern Portugal, and Schaubé³ thought he had settled the whole matter by pointing out the highly developed cloth industry of the Mussulmans in northern Africa. Thus philologists and historians have gyrated about the zero point without making the slightest advance in any direction. It is the old trick of excluding from consideration such matters as might widen their horizon, on the stereotyped plea that they are foreign to their specialized departments, whereas such specialization is generally suicidal and invariably increases the difficulty of a thoro investigation.

The amazing thing is that nowhere outside Tuscany do we ever hear of *Garbo* wool and *Garbo* cloth, altho *Garb*, which the Arabic scholars identify with western Algeria and eastern Morocco,⁴ was well known to

¹ A. Schulte, *Garbo und Florenz*, in *Zeitschrift für die gesammte Staatswissenschaft*, vol. lviii, p. 39 ff.

² *Garbowolle und Garbotuche*, in *Historische Vierteljahrschrift*, vol. vii, p. 385 ff.

³ *Handelsgeschichte der romanischen Völker des Mittelmeergebiets bis zum Ende der Kreuzzüge*, München and Berlin, 1906, p. 780.

⁴ Schulte, *op. cit.*, p. 41 f.

the Latin peoples, and occasionally was visited by them for commercial purposes.¹ In vain one would look in Portuguese, Spanish, Catalan, Provençal documents for such a mention. Even in Tuscany there is an enormous difference between *Garbo* wool and wool imported from *Garb*. In Siena *lana di garbo* is apparently placed far above all other kinds of wool, whereas in Pisa, in the beginning of the fourteenth century, *lana di garbo* is considered of about the same quality as *francesca* or *francigena*. Doren² has shown that under the latter name English wool is to be understood and that, furthermore, the *lana francesca* continued to rise in value, while *garbo* occupied a secondary position. But in the middle of the thirteenth century *garbo* was unquestionably the finest kind of wool or cloth, as is shown by the fact that at Bologna *lana de garbo* alone could be dyed³ whereas at a later time English wool shared this privilege to an even higher degree. Doren has pointed out the great confusion that later developed in connection with the term *garbo*, but with that we have no concern here. We wish only to ascertain the original meaning of the expression and to point out the reason for a possible later confusion. In 1315 *lana de garbo* is quoted in relation of 50 to 65, as compared with English wool,⁴ whereas in a tariff list of

¹ "In itinere Cecille, in buco nave Sancti Nicholai, et inde ubicumque Deus et ordinabit, causa negotiandi, in *Garbum* vel in Ispaniam." L. Blancard, *Documents inédits sur le commerce de Marseille au moyen-âge*, Marseille, 1884, vol. i, p. 101.

² Die Florentiner Wollentuchindustrie, vol. i, p. 68.

³ L. Frati, *Statuti di Bologna dall' anno 1245 all' anno 1267*, Bologna, 1869-77, vol. II, p. 72: "Item statuimus quod nulla lana debeat habere tincturam nisi fuerit *lana de garbo* vel etiam varia, et si lana aliqua vel pannum inveniretur que tinta esset et non nuaria vel de garbo auferratur ab eo et comburatur in curia comunis." What *varia*, *nuaria* is is not clear.

⁴ R. Davidsohn, *Forschungen sur Geschichte von Florenz*, III. Theil, p. 132: "Entschädigung zu zahlen pro qualivet salma lane lavate de Garbo 50 fl. aur. et lane Fragigne 65 fl. auri."

1307 wool from Garbo is almost the lowest in the list.¹ Whereas a salma of English, Scotch, and Burgundy wool is quoted at 15s., and a salma of wool from Catalonia and the Provence at 10s., *lane sucide de Tunis, Bugea et Garbo* is given at 2s. 6d., that is, the proportion is here 10 to 60, as against 50 to 65 before. There is here a contemporary confusion which cannot be explained on any theory of deterioration in the product, a confusion which, as we shall see, was universal along the Mediterranean.

In a tariff of Perpignan of 1284 and 1295 we have a reference to *teles de Garp*: "*teles del Garp*" (*de Garp*), *e vintenes, e canabes, e totes autres teles*,² while in the *Leudaire de Saverdun* (ann. 1327)³ *carbe* filat *e non filat* follows after *lana* and *li*. In Raynouard's Provençal Dictionary *carbe* = canabe, hemp, and this exactly suits the sense in the *Leudaire*, for after wool and flax one can think only of a hemp product, consequently the *del Garp* of Perpignan cannot be identical with *carbe* of Saverdun, since after *del Garp* comes *canabes* which is the same as *carbe*. What *vintenes* is I do not know; *vintenes* and *cannabe*, however, occur already in a Marseille tariff of 1228,⁴ and in a list of 1190 at Genoa⁵ but instead of being preceded by *teles del Garp*, they are preceded by *telas primas*.⁶

¹ Ibid., p. 102.

² Revue des langues romanes, vol. iv, p. 371, vol. v, p. 85. The editor, A. Alart, says: "Ce mot se retrouve encore dans le tarif de 1295, et nous sommes porté à le faire venir de l'arabe *el garb* (le couchant). Il s'agirait donc, dans ce sens, des toiles de l'ouest de la France?"

³ Ibid., vol. xvi, p. 108.

⁴ L. Méry et F. Guindon, Histoire analytique, et chronologique des actes et des délibérations du corps et du conseil de la municipalité de Marseille depuis le X^e siècle jusqu'à nos jours, Marseille, 1842, vol. i, p. 346.

⁵ Historiae patriae monumenta, vol. vii, col. 361.

⁶ Ibid., p. 345.

Obviously *del Garp* corresponds to *primas* and to English A1, but *tela* can only mean cloth made from flax, hemp, or cotton, consequently *del Garp* was in the thirteenth century in the Provence, as in Tuscany, a commercial expression of excellence, referring, however, not to wool or cloth, but to a textile fabric of either hemp or cotton. Since *tela de Garp* and *tela de Rems* pay a duty of 1dr., whereas "*totes autres teles, o de Campanya, o d'Alemayna, o d'autra terra*"¹ pay 2dr., it is reasonable to suppose that *tela de Garp* was a native product and so was favored as against Champagne, German, or other foreign goods.

In the Statutes of Bologna of the thirteenth century we have a prohibition against the notary's use of paper *de garbo*² or *garbitta*.³ That this is not a prohibition against the use of paper made of cotton fibre is evidenced by another statement of the tariff for paper in a Bologna MS. of the year 1289, where cotton paper is mentioned by the side of *garbexa* paper.⁴ Nor is there the slightest reason for the derivation of the word, with Frati, from Lat. *carbasus*, fine linen. *Garbo*, *garbitta*, *garbexa*, *garbesa* represent some North Italian dialectic words meaning "goat, kid," as can be shown by a number of regulations in regard to the use of wool in the manufacture of cloth. In Bologna no one was permitted to mix wool of the ox, goat, ass, or hare with that of the sheep unless it was to be used in the manufacture of a coarse kind

¹ *Revue des langues romanes*, vol. iv, p. 372.

² "Notarii qui praesunt statutis pro illo officio habeant bonas cartas pecorinas et non *de garbo* a comuni pro v. statutis scribendis." L. Frati, op. cit., vol. III, p. 164.

³ "Et si sum notarius massarii . . . in bonis cartis scribam et non in *garbittis*." Ibid., vol. I, p. 147.

⁴ "De salma cartarum de *Garbeze* et peodium; — de salma cartarum de *banbaxe*," *ibid.*, vol. III, p. 665, and repeated in a Florentine tariff of the year 1330: "cartarum de *Garbes* et peodium, pro salma 4s. Bon., cartarum de *bambagia* 4s.," *Davidsohn, Forschungen*, vol. III, p. 146.

of cloth known as mezzalano.¹ Venice was equally opposed to the use of goat's hair, which is here called *garbeta*² and still clearer is the prohibition at Brescia in 1248.³

The dialectic words *garbo*, *garbexa*, *garbitta* are in all likelihood adaptations of Provençal or Catalan words, for in Marseille and Barcelona there was a very active commerce in kid skins and fleeces in the beginning of the thirteenth century, and the Prov. *cabritz*, Catal. *cabrits*, *cabrites* at once explain the endings *exa*, *itta* in the Italian words. We read in the Marseille tariff for 1228: "agnel e *cabritz* doni lo pareils — 1 obola,"⁴ and at Barcelona we often hear of kid skins, of "centum de *cabrites*" (ann. 1221) and "bala grossa de *cabrits*."⁵ However, the forms *capretto*,⁶ *crauelo*⁷ are also recorded for Italian cities. So, too, the form *garbo* goes back to a Catalan word,

¹ "Statuimus et ordinamus quod aliquis de dicta societate non debeat emere . . . nec habere, nec tenere in domo pilum bovis vel capricii vel asini aut leporis, filatum vel non filatum, tinctum vel non tinctum . . . et si filatus vel mistus cum alia lana fuerit, aut de ea laboraverit, vel laborari aut poni fecerit in panno bixello vel agnello, condemnatur, . . . item dicimus quod licitum sit omnibus de dicta societate facientibus pannos mecalanos habere et tenere de lanis prohibitis . . . causa ponendi et laborandi in pannis mecalanis." A. Gaudenzi, *Statuti delle società del popolo di Bologna*, Roma, 1896, vol. i, p. 370 f.

² "Statuimus et ordinamus quod pelliparti artis de agnellinis non audeat miscere agnellinas cum *garbetis*, nec etiam audeat cum dictis agnellinis pelles edorum miscere, nisi tantummodo in listis." G. Monticello, *I capitolari delle arti veneziane*, Roma, 1906, vol. II, 1, p. 108 (ann. 1265).

³ Item statuunt correctores quod pilum bovis vel capre non conducatur in civitatem Brixie . . . et nullus debeat in civitate vel extra in tota nostra virtute verberare nec texere neque filare neque tingere aut aliquo modo in panno ponere vel poni facere. . . . Item addunt correctores quod nequis audeat vel presumat ponere vel poni facere lanam grossam capre in panno." *Hist. pat. mon.*, vol. xvi, col. 1584 (139).

⁴ Méry and Guindon, *op. cit.*, vol. i, p. 348. Also in the *Leuda de Tortosa* (ann. 1249), *cabrits*, in *Revue des langues romanes*, vol. iv, p. 264, and at Perpignan (ann. 1284), *ibid.*, vol. v, p. 371.

⁵ A. Capmany y de Montpalan, *Memorias historicas sobre la marina, comercio y artes de la antigua ciudad de Barcelona*, Madrid, 1779-82, vol. II, pp. 6 and 20.

⁶ At Chiasso, ann. 1327, in *Hist. pat. mon.*, vol. xvii, col. 180; in *Statuta Casalis* (14. cen.) *ibid.*, vol. II, col. 1013; in Bonaini, *Statuti inediti della città di Pisa dal XII al XIV secolo*, Firenze, 1857, vol. III, p. 1004.

⁷ In *Stat. Cas.*, *op. cit.*, col. 960.

which is given in the Latinized form *cabru*, *cabrum*, "tota bestia de lana, o de *cabru*, tota carrega de pells aynines o *cabrum*,"¹ where the *Leuda de Tortosa*² and the tariff of Marseilles³ have *faixs daynines o de cabritz*, *agnel e cabritz*. The fluffy hair of the goat was employed in the manufacture of rugs, and, since it was almost exclusively Catalonia and the Provence that raised goats, we read in the Pisan tariff of Catalan and Provençal *carpitas*.⁴ This *carpita*, literally goat's (cloth), is the origin of English *carpet*.⁵

It is, therefore, obvious that in prohibiting the use of *carta de Garbo*, the prohibition was directed against the use of kid or goat parchment. It will now be easy to ascertain what was meant by *lana di Garbo*, *panno di Garbo*. Aeneas Sylvius⁶ tells us that in the island of Cyprus a woollen cloth, called *zambelotto*, our modern camlet, was made from the wool of goats, and Gesner⁷ quotes A. Alpagus, called *Bellunensis*, a translator of Avicenna's works, to the effect that camlet and other delicate stuffs were made from *lana merhazi*, which, in another exposition of Avicenna, is called *mathahaze*. This is Arabic *mar'izā*, *mar'izza*, fine goat-hair beneath the coarser one. Fraenkel⁸ thinks that this is from Aramaic *'amr 'iza*

¹ Leudes de Puigcerda et de la Vall de Queroll (ann. 1288), in *Revue des langues romanes*, vol. iv, p. 507.

² Loc. cit.

³ Loc. cit.

⁴ "De duabus *carpitis* provincialis, de una *carpita* Catalogne." Bonaini, op. cit., p. 114.

⁵ Vol. III, p. 144. Provençal *carp*, fluffy, is, no doubt, derived from it. In the *Regula Templariorum* cap. 70 we read, "*carpitam* habent in lecto qui aroco, oulestra vel coopertorio carebit." (Du Cange, sub *carpia*), and in a list of articles for the year 1156 in Genoa, we read of a pillow made of "what is called" carpet-wool, "duos coisinos unus de corre. et alius de *carpita* dicitur *lena*." Hist. pat. mon., vol. vi, col. 310.

⁶ Aeneas Sylvii Piccolomini . . . Opera, Basileae, 1571, p. 377.

⁷ Conradi Gesneri medici Tigvrini, *Historiae animalium* Lib. I. de quadrupedibus uulparis, Tigvri, 1551, p. 280.

⁸ S. Fraenkel, *Die aramäischen Fremdwörter im Arabischen*, Leiden, 1886, p. 41 f.

lit. *lana capri* (which Fraenkel incorrectly translates by "Schaafwolle"), but in Spain *lana de cabras* was translated into Arabic by *guabra*,¹ which is from Arabic *wabar*, soft hair of camels, goats, hares, etc. This *guabra*, which by a strange coincidence sounds very much like the derivatives from Latin *capra*, goat, like *merhazi*, which by another rare coincidence can hardly be distinguished from *ma'azi*, de *capra*, represented the finest wool used in the manufacture of camlets and similar delicate textures. Apparently the Provençals and Catalonians continued to manufacture camlets, and *camelot* or *camellot de lana* even in the fourteenth century was considered far superior to cloth from sheep wool. In a franchise of the year 1277 given by Philippe le Hardi to Italian merchants carrying goods from Montpellier to Nîmes, camlets pay double the duty of other cloths.² In a Catalan sumptuary law of 1306 camlet is denominated *drap de lana*,³ and in another similar law for Barcelona, of the year 1330, permission is granted to women to wear garments of *camellot de lana*.⁴

Merhazi was the Arabic mercantile expression for Al in the manufacture of cloth and in wool. Now, the goats were in the Middle Ages abhorred in the central and southern countries,⁵ tho the Provence

¹ Petri Hispani De lingua arabica libri duo, by Paul de Lagarde, Göttingae, 1883, p. 289.

² A. Germain, Histoire du commerce de Montpellier, Montpellier, 1861, p. 279. There is probably some significance in the fact that at Saint Vaast d'Arras goats were listed in the same category with gold and slaves: "Omnis homo sive liber sive non, si emerit aut vendiderit aurum, vel servum vel ancillam vel capram Theloneum dabit," Van Drival, Cartulaire de l'abbaye de Saint Vaast d'Arras rédigé au XII^e siècle par Guimans, Arras, 1875, p. 172, and similarly p. 176.

³ Revue des langues romanes, vol. vii, p. 55.

⁴ Colección de documentos inéditos del archivo general de la corona de Aragón, vol. viii, p. 179.

⁵ See my article on Fran. *boucher*, in Bysantinisches, in Zeitschrift für romanische Philologie.

and Catalonia never stopped raising them. When Bologna, in 1222 or 1232, invited certain strangers to come to that city and establish cloth factories, they were granted immunities from all public duties, but they were requested under no condition to use other wool in the manufacture of cloth than that of the sheep or lamb.¹ But, while the Tuscans prohibited the use of kid parchment, they were unable to oust the expression *de garbo*, a translation of the Arabic *mar'izā* and *guabra*, from the commercial vocabulary and, as *francigena* became the term even for English wool, so by a popular transformation *de garbo* was made *de Garbo*, "from a distant western land." Whether this *de garbo* represented the fine goat hair, from the Provence and Catalonia surreptitiously used, or a peculiar kind of sheep hair, I am not prepared to say. *Di garbo* became in Italian the equivalent for "especial refinement," hence *uomo di garbo*, a man of fine bearing. On the relation of English *garb* and similar words in the Romance languages I now need no longer dwell—they have nothing whatsoever to do with the commonly accepted derivations. That the manufacture of camlets and hence the use of the fine goat wool in their production was due to Eastern influence is evidenced by the presence in Paris of Saracen carpet makers, that is of makers of carpets in the Eastern fashion,² and Smirke³ is probably right when he identifies

¹ "Statutum est a concilio comunis bon. quod illi qui venerunt et nunc sunt in Civitate ista et nunc ad faciendum pannum lane sive pignolatum sint immunes a publicis factionibus per XX annos a tempore quo venerunt in bon. ex causa predicta, quod statutum cepit habere locum M.CC. xxi et factores panni lane teneantur et debeant facere fieri bonum pannum de bona lana et pura torta et proventa de pecudibus et agnis, et de non aliis animalibus." Frati, op. cit., vol. I, p. 494.

² Le livre des métiers, p. 102 ff.

³ Ancient Customary of the City of Winchester, in The Archaeological Journal, vol. ix, p. 85.

the *ustil turs* of the Winchester Consuetudinary with a Turkish loom. When, however, Italy and other countries pressed the use of sheep wool in the manufacture of their cloths, the old Eastern industrial expressions became unintelligible and were often confused. This has happened with *tiretaine*, of whose vicissitudes from Central Asia to Europe I have dealt before, and to this, no doubt, is due the confusion of *garbo*, wool, that is fine goat wool, with wool from *Garbo*, a coarse product, which played an insignificant part in the importation of wool.

THE ENGLISH GROCER

Gross¹ defines the grocer as a wholesale dealer whose dealings probably by the early part of the fifteenth century became limited to grocery as now understood. The *Oxford English Dictionary* assumes a similar development of the word, and relates the two senses by stating that "the company of Grocers, said to have been incorporated in 1344, consisted of *wholesale* dealers in spices and foreign produce, hence probably the later sense 2." Not less confusing is the history of the grocer as understood by Cunningham²: "The pepperers had a leading share in nominating the officials who were admitted to the office of weighing *aver-du-pois*, and in 1316 they made ordinances for weighing. Some of the leading men among them appear to have been of Italian origin, and they certainly dealt in spices and other goods which reached England from the south of Europe; in 1315, they united with the spicerers in forming

¹ The Gild Merchant, Oxford, 1890, vol. 1, p. 128.

² W. Cunningham, The Growth of English Industry and Commerce during the Early and Middle Ages, Cambridge, 1906, vol. 1, pp. 323, 324.

the Grocers' company, — a body which exercised a predominating influence on London affairs in the latter part of the fifteenth century. They may have derived their name from the popular complaint against them as *engrossers*, but it seems possible that they assumed it from their wholesale transactions, *en gros*, or even from their dignified office of weighing by the *peso grosso*; they came to have charge both of the King's and the wool beam — the *statera* and the *trone*."

The business of the grocer as such is of a purely English origin, but as the word is primarily French, we must first become acquainted with its application in France. In *Le livre des métiers* a *grossier* is mentioned among various workers in iron¹ and once as some kind of a carpenter.² It stands to reason that neither artisan produced anything at wholesale, which is precluded by the very enumeration of the workers, who are not classed as retail workers as against the *grossier*. The conception of what in the Middle Ages constituted retail and wholesale is so variable among economic historians³ that it becomes necessary first to establish the exact connotations and uses of these words. The earliest mention known to me of *ad detallium* is of the year 1207,⁴ where the older chart, of the year 1199, reads, "*eas pacifice vendant ad*

¹ *Le livre des métiers*, p. 38: "Marischas, Greffiers, Hiaumiers, Veilliers, Grossiers"; p. 39: "Fevre, Marischal, Grossier, et Greffier et Hiaumiers pueent ovrer de nuis s'il leur plaist"; p. 254: "Fevres, Marischaus, Seruriers, Grayfiers de fer, Veilliers, Heaumiers, Grossier, Coutelliers."

² *Ibid.*, p. 87: "Item, ne pevent ouvrer li Charpentier grossier ne Huochier ne Huissier, de nuis."

³ See F. Keutgen, *Der Grosshandel im Mittelalter*, in *Hansische Geschichtsblätter*, Jahrgang 1901, Leipzig, 1902, pp. 67-140.

⁴ "Præterea, predicti cives cum mercaturis quecumque fuerint, venientes in domania nostris, poterunt eas licite vendere *ad detallium* vel alio modo." A. Giry, *Les établissements de Rouen*, Paris, 1885, vol. II, p. 59.

destallagium.”¹ At about the same time we get *ad tallium* in the south of France and later in Lucca and Siena.² The more common expression in Italy is *ritaglio* which in England, where *very many commercial terms owe their origin, with the commerce in which they are used, to Italy, and not to France*, produced the word *retail*.³ It is obvious that the expression *ad retaglum* arose in the cloth trade and referred to the sale of pieces cut off from the roll,⁴ and the laws quoted above show that the foreign traders were jealously kept from the far more profitable and desirable “retailing” of goods, which was the special privilege of the native merchant; hence in Pistoja they opposed a retail cloth dealer to one from France.⁵ But in many places the *tagliatori* were

¹ Other early cases of *à détail*: “A cels qui vendent *à détail* comme cils que achatent por revendre” (ann. 1239), J. Garnier, *Chartes de communes et d'affranchissements en Bourgogne*, Dijon, 1868, vol. II, p. 29; “vendre en gros pour revendre *à détail*” (ann. 1307), *Mémoires de la société de l'histoire de Paris et de l'Ile-de-France*, vol. II, p. 136 f.

² *Ne quis extraneus pannos aliquos in hac villa vendere debet at tallium, nisi eos quos ad collum portaverit per villam.*” *Consuetudines villas Montipessulani* (ann. 1204), in A. Teulet, *Layettes du Trésor des chartes*, Paris, 1863, vol. I, p. 263. “*Panni venduti a tallio.*” F — L. Polidori, *Statuti senesi scritti in volgare ne' secoli XIII e XIV*, Bologna, 1863, vol. I, p. 289 (ann. 1292), p. 226. “*Ne mercatorum utilitas ad extraneos dividatur, decernimus statuantes quod nullus forensis undecumque sit . . . possit, audeat vel presumat vendere vel vendi facere per se vel aliam personam, directe vel per obliquum, aliquam mercadantiam videlicet setam, filugellum, sandada, aurum, orpello vel arginello, ad tallium vel ad minutum vel minutatim, vel alias mercationes ad minutum vel minutatim, et maxime illas mercationes et merces quas emerit in Civitate Lucana, districtu vel fortia, directe vel per obliquum.*” G. Tommasi, *Sommario della storia di Lucca* (Archivio storico italiano, vol. x), Firenze, 1847, Documenti, p. 62 (ann. 1306).

³ “*Nullus de padua vendat drapos novos ad retium in platea comunis.*” *Statuti del comune di Padova dal secolo XII all'anno 1285*, Padova, 1873, p. 272 (ann. 1239). “*Statuimus quod mercatores teneantur non emere nec emi facere ab aliquo forensi qui venderet vel vendi faceret pannos aliquos in Bononia ad retaglum . . . non obstantes quod forenses in feris valeant retaglare.*” A. Gaudenzi, vol. II, p. 121 (ann. 1264-72). “*Fuit capta pars quod nullus de cetero audeat vendere pannos ad retaglum in aliqua parte in Venetiis, nisi in stationibus comunis de subus ubi venduntur panni ad retaglum.*” G. Monticcolo, op. cit., vol. I, p. 187. This law was revoked in 1304 (*ibid.*, p. 193).

⁴ “*Et ut non vendant vel vendi faciant aut consentiant per se vel per alium, ullo modo, aliquem scampulum, vel ritallium seu cantum alicuius panni.*” F. Bonaini, *Statuti inediti della città di Pisa*, Firenze, 1857, vol. III, p. 40.

⁵ *Tende apotecarum mercatorum pannorum, tam de francia, quam de ritallio.*” L. Zdekauer, *Statutum potestatis comunis Pistorii anni 1296*, Mediolani, 1868, p. 193.

identical with the German Gewandschneider, as for example, in Bergamo¹ and in Chiesa.² We find an excellent illustration of the jealously guarded retail trade in a letter of Margaret of Flanders of the year 1268, in which she asserts the rights of the merchants of Hamburg to keep the Flemings out of the retail trade.³ In Parma foreigners could sell cloth at wholesale or retail at certain fairs,⁴ and later this privilege was extended to all goods and for any time, in order to draw the foreign merchants to the city.⁵

One would think that the expression *in grosso et minuto* corresponded to our "wholesale and retail," but that would be far from the mark. Leaving out of consideration the meanings for *grossus* such as "big, coarse," *minutus*, "small, fine,"⁶ we shall confine ourselves to the definition of meanings that can throw a light upon the meaning of *gross* in "grocer." At Brescia, in 1251, long wool was considered a minute mercery, while fine wool and cotton were gross mer-

¹ Hist. pat. mon., vol. xvi, col. 2002 ff.

² Ibid., vol. xvii, col. 171 f.

³ "Praeterea mercatores nostri Flandrenses apud Hamburg vina afforare non poterint nec ibidem ea vendere per amphoras seu mensuras, nec pannos sciindendo eos per ulnas, neque bona alia vendere particulariter per numeratas denariatas, nisi hoc de civium et mercatorum Hamburgensium processerit voluntate." L. Gilliodts-van Severen, Cartulaire de l'ancienne estaple de Bruges, Bruges, 1904, vol. 1, p. 53 f.

⁴ "Et Potestas teneatur operam dare bona fide sine fraude quod Flamenghi et Francigenes veniant in civitatem Parmae, et drapos vendant in grosso et in minuto quomodo voluerint in Parma." Statuta communis Parmae digesta anno 1255, Parmae, 1856, p. 61 (ann. 1236).

⁵ "Item omnes mercadandiae, cujuscumque conditionis fuerint, possint duci ad civitatem Parmae, et ibi vendi in grossum et minusum per quamlibet personam volentem vendere, non obstantibus aliquibus capitulis vel Statutis, ut major ubertas et melior numata possit habere in civitate Parmae." Statuta communis Parmae ab anno 1266 ad annum, 1304, Parmae, 1857, p. 68 f.

⁶ "Vendens animal grossum, dabit obolum Tolose pro leuda, de porco vel sue pietam, de animalibus minutis nihil solvet," (ann. 1241), Ordonnances des Roys de France, vol. xv, p. 424. "Quod nullus magister vel filicampus, de opera grossa vel de supile, audeat comparare, campum cum restibus occasione ipsum revendendi." I capitolari delle arti venesiane, ibid., p. 102. "Grossus et minutus denarius," Statuti pisani, vol. 1, pp. 291, 292, 378.

ceries.¹ In a fourteenth century law of Palermo, cheese, meat, wool, flax, hemp, cotton are considered gross goods.² In Venice they distinguished between *specie grosse*, which included ginger, cinnamon, pepper, clover, nutmegs, cassia, sandal-wood, etc., and *specie menude*, such as scammony, rhubarb, manna, aloes, turbith, terebenthina, etc.,³ and early in the fourteenth century the two kinds could not be sold by the same person,⁴ and a similar provision was made at Florence.⁵

In France, too, *en gros* and *à détail* have not the same meaning as "wholesale" and "retail." The *chanevacier*, canvas-seller, paid no customs for cloth sold in his stall or in the King's market at Paris at retail, except the usual stall duties, but had to pay an obole for every piece bought or sold, if it contained more than five ells. To protect the native dealers, the stranger merchants from Normandy could not cut the pieces at all, but had to sell them whole, that is, they were not allowed to sell *à détail*, cut-off pieces, but had to sell *en gros*, in the bulk.⁶

¹ "Quod mercathendia minuta intelligitur comuniter galeum, vel lana grossa, et his similia. Mercathendia grossa intelligitur lana subtilis panni, et bambucium, et his similia." Hist. pat. mon., vol. xvi, col. 1584 (109). In the law of 1313 "cuminum" is added among the minuta mercathendia. Ibid., col. 1716.

² "Licet omnibus et singulis civibus Panhormi ponderare, vendere, et emere caseum, carnes, lanam, linum, canapem, cuttonem et quaecumque mercimonia grossa ad pondus, quod dicitur quarteronus." Constitutiones regni Siciliae, vol. 1, Part 1, p. 53 f.

³ Calendar of State Papers and Manuscripts, Venice, London, 1864, vol. 1, p. cxxxvii ff.

⁴ "Salvo quod ille persone que habent bulletam vendendi ad minutum, possint vendere res contentas in sua bulleta solummodo et non alias res que pertinent ad specularem." I cap. d. art. venes., vol. 1, p. 168.

⁵ "Et quod nullus mercator grossus vel alia persona teneat in sua apotheca nec vendat vel vendi faciat pipere minutum." Lib. III, cap. xxxiv, ibid.

⁶ "Li home forein de Normandie et d'ailleurs, qui ameneient toilles a cheval a Paris pour vendre, il ne pueent ne ne doivent vendre ou marchié de par le Roy a détail; et se il le font, il perdent toute la toille qui est détaillée. Et ce ont ordonné li preud'omme du mestier, pour ce que li Roys i perdoit sa coustume; quar li home forein doivent de chascune toille que il vendent en gros obole de coustume, et de tout ce que l'en vent a détail ou marchié le Roy l'en ne doit que obole de coustume de tout la journée: par coi li Rois seroit deceu de sa coustume, se li home forain détaillaient." Le livre des métiers, p. 121.

The transition from the idea of bulkiness and detached pieces to that of wholesale and retail is a perfectly natural one, and this change has taken place, now in one trade, now in another, according to its very essence, but it will not be hard to show that even through the fourteenth century the old conception of relative bulk predominated. For this purpose we shall analyze the Ordinance of the Fishmongers at Amiens, which belongs to the second half of that century.¹ Strangers who brought fish to Amiens could sell it themselves, either *en gros* or *à détail*, by paying a certain tax for the hire of a stall (art. 1.) Fish sent in by outsiders was consigned to the *grossier*, who sold it *en gros* for the stated fee of 2 sous per somme (2). Before any one else could provide himself with fish, each *grossier* received 2 sommes, and if there was a greater abundance brought in, the surplus was divided out equally among all the *grossiers* (3, 4). There were similar provisions of mutual aid among *grossiers*, in case of scarcity of fish (5). The paniers of fish sold *en gros* were, as to full measure, bought at the risk of the *détail* merchants, or of those who otherwise bought them (ou par autrez qui acheter les volront) (7). No fish could be kept over to the next day in summer or two days in winter, (9-12). There were to be in Amiens 14 sellers of fish *en gros* and no more (18). Similarly there were to be but 24 venders *à détail* (19). The *en gros* price was by the hundred, but the merchant had to sell the fish at the same price by the demicent, the quarteron, or the demi-quarteron (22). There was still a third way of trading which in the Ordinance is denominated *à loyer*. Apparently the *grossiers* or the importing

¹ A. Thierry, *Recueil des monuments inédits de l'histoire du Tiers État, première série, tome deuxième*, Paris, 1853, p. 139 ff.

fishmongers sent out men to sell for them for a stated wage or salary. There is a provision that a taverner, a cook, or any private person could neither buy nor sell *à détail* or *à loyer* (28, 30). A fishmonger, *poissonier*, could sell only 2 paniers a day, unless there was a great abundance in the market (31). Foreigners and *grossiers* could sell their fish *en gros* until the second bell, after which they had to give it *à loyer* to venders who sold them *à détail* (36).

From the above we see that the *grossier* was not a wholesale dealer, but more nearly a commission merchant, whose chief function was the equitable distribution of the fish among venders and others who purchased directly from him. On the other hand, the foreign merchant who brought the fish to Amiens was privileged to sell either *en gros* or *à détail*. Wherever the outsider was restricted to sales *en gros*, he felt it as a distinct discrimination against him, as the advantage to every mediaeval merchant was entirely on the side of the retail trade. In the case of such perishable goods as fish, which at the end of the day had to be thrown away,¹ it was more profitable for the importing fishmonger to dispose of it at once through the intermediary *grossier*. This arrangement proved insufficient, for beginning with art. 28 we have what apparently is a later addition. A second link was added between the importing fishmonger and the retailer, that of the vender selling for the fishmonger or *grossier* for a stated wage. The retailer sold in small quantities or even by the pound, chopping up the fish. At the end of the thirteenth century the fishvender *à détail* was distinctly one who cut up the fish.² He merely reached the poorer people,

¹ *Ibid.*, art. 49.

² Giry, *op. cit.*, p. 507: "Chil ki vent porpois *à détail* doit taillier le cras avoec le maigre."

and was more like our modern hawker. That all the fish did not reach the consumer through the retailer is evident from the abnormal relation of the number of retailers to *grossiers*. As each retailer could sell but two paniers¹ a day, and the average amount handled by a *grossier* was two horse-loads, three or four *grossiers* would have supplied all the twenty-four venders with fish. Consequently the vast amount of fish on hand with the remaining *grossiers* was either sold by means of the venders à loyer or directly to restaurant-keepers, taverners, and hostelries, and many a private person must have availed himself of purchasing by the quarteron or demi-quarteron, that is, by the smaller measures or quantities.

It can be shown from a variety of sources that the *grossier* was frequently dispensed with as an intermediary of trade. Thus Philippe-le-Bel in 1305 provided that the people should be able to purchase their victuals at the same price as offered to the *grossiers*.² In *Le rôle de la taille imposée sur les habitants de Paris en 1292*,³ the *grossiers* are not mentioned at all, obviously because they not yet formed a distinct class, even as they are absent, but for the carpenter and smith *grossiers*, from the *Livre des métiers*. In 1320 we find for the first time *grossier* and *detailleur* fishmongers at Paris,⁴ and their exact meaning is ascertainable from an ordinance of the year 1324, where a *grossier* is held to be one who sells in the

¹ In Paris, a panier held from 50-60 fresh mackerels, R. de Lespinasse, *Histoire générale de Paris*, vol. 1, p. 411.

² "Item nous voulons et ordenons que de toutes denrées venans à Paris, puis que elles seront afeurées, tout le commun en puisse avoir par un tel pris comme li grossiers les acheteront." Ibid., p. 198.

³ H. Géraud, *Paris sous Philippe-le-Bel*, Paris, 1837.

⁴ "Item que nuls ne puist estre grossier et detailleur de la meisme marchandise dudit mestier, sur painne de l'amende." R. de Lespinasse, *Hist. gén. d. Paris*, vol. 1, p. 414.

name of a foreign merchant, while those who sell on their own account, by the hundred, the demicent, the quarteron, or two, three, or four herrings at a time are held to be *detaillieurs*.¹ Here *en gros* means the undivided mass, as received in commission from the foreign merchant, and the privilege granted to the *detailleur* to sell by the hundredweight only accentuates the fact that the relation between the two is not the same as that between the wholesaler and the retailer, as we understand it today. When, therefore, a law of Edward II of the year 1311 permits no *grosser* of wine to be taverner and vice versa, the *grosser* is not to be taken as a wholesale merchant, but only as a foreign trader who sold first to all "goodmen," and only later to any one who might wish to buy."² We thus find in England the same conditions as regards the conceptions of what constituted the gross and retail as on the continent, and the law just quoted precludes the assumptions of the economic writers that the *grosser* was at the start a wholesale dealer, and the explanation given as to the origin of the *grocer* falls to the ground.

We shall now try constructively to establish the genesis of the English grocer. One of the most frequently recurring set of laws in Italy in the thirteenth

¹ Item que tous cens doudit mestier qui vendent ou nom des marcheans forains sont et seront tenus pour *grossiers*, tant seulement, et oeuls qui vendent par cens, par demi cens et par quarterons et par deux trois ou quatre harens, ou nom d'euls et par euls, sont et seront tenus pour *detaillieurs*." Ibid., p. 416.

² Et avant ceo q'il soyent herbergies, soit chascun tonel, merche al un bout et al autre, du merke du gauge, insint que l'achatour puisse apertement veer la defaute du tonel. Et apres ceo qe les vyns seront herberges, demoeigent en pees par trois jours, insint q'il ne soyent mustres ne mys a vente dedent les troys jours, s'il ne soit as grants seignurs et as autres bones gents, pur lur estor ou pur lur user. Et apres les troys jours vendent as totes gents qi achatier les vodront et deveront solonc ceo qe anndement scoloyent faire. . . . Et que nul *grossour* de vyn ne soit taverner, ne nul taverner ne soit *grossour*." J. Delpit, Collection générale des documents français qui se trouvent en Angleterre, Paris, 1847, p. 45.

century is that which deals with the manner of weighing goods, and the investigation of this subject alone would demand much time and labor. I shall, therefore, confine myself here to the treatment of the same laws in the North. That they are derived from the Italian laws will appear from philological considerations alone.¹ In 1280 Count Guido of Flanders gave the merchants of Spain and Germany who visited Aardenburg a franchise in which the first reference to precise weighing is found in the North.² The demand that the hand be not placed on the weighing side of the scales was in 1303 repeated word for word in a franchise granted to German and other foreign merchants in England by Edward I.³

This was so novel a departure for England that Edward I next year repeated the injunction literally in a letter to the mayor and aldermen of London, insisting that the privilege of equitable weighing be granted to the foreign merchants, or cause be shown why the City of London did not comply with his demand. To this the answer came that from time immemorial it had been the custom to weigh in favor of the purchaser and that the new law would discrimi-

¹ The first mention of just weighing, from which all the later ones are derived, is to be found in the Theodosian Code (Mommsen's ed., p. 722): "*nec pondera depriment nullo examinis libramento servato, nec aequis ac paribus suspense statere momenti.*"

² "Que li marchant aient pois de balanches et ke li peseures poise tout en fin et ke li oste ses mains dou pois et ke li marchans u autres fire les balanches de le main en la moienne de la balance, parquoi ele ne voise plus dune part ke dautre, et ke li marchans puet contredire le peseur sans rien mesfaire." K. Hölzlbaum, *Hanseisches Urkundenbuch*, Halle, 1876, vol. i, p. 296.

³ "Item volumus, ordinamus et statuimus, quod in qualibet villa mercatoria et feria regni nostri predicti et alibi infra potestatem nostram pondus nostrum in certo loco ponatur et ante ponderacionem statera in presencia emptoris et venditoris vacua videatur et quod brachia sint equalia, et extunc ponderator ponderet in equali, et cum stateram posuerit in equali, statim amoveat manus suas, ita quod remaneat in equali, quodque per totum regnum et potestatem nostram unum sit pondus et una mensura et signo standardi nostri signentur." *Ibid.*, vol. ii, p. 16.

nate against the citizens of London.¹ But the King was persistent and a month later repeated the law and called the mayor and aldermen of London to account.²

The dispute between the King and the city of London lasted until the year 1309, when an amicable arrangement was made: "Whereas frequently aforetime many and divers contentions used to arise between foreign merchants selling and free merchants (*mercatores privatos*) buying divers goods of weight (*averia ponderis*) and spices which used to be weighed as well by the great balance as by the small, inasmuch as there was uncertainty in the draft of weight (*super tractu ponderacionis*), for that the weigher gave to some more and to some less as was reported; for avoiding and removing which contentions in future it was agreed the day, etc., by Thomas Romain, the Mayor and the Aldermen, and with the assent of Luke de Haverynge, William de Bydik, Ralph le Balauncer, Peter Adrian, William le Barber, John Godelmynge, Richard de Dorsete, Richard de Spain, citizens and merchants of London, and John le Lung, Hildebrand de Nova Curia, James Fisshe, John Pope, Richard Sware, Bertram de Coloigne, John de Sterne-

¹ "Modus ponderandi averia ad civitatem Londoniensem venientia, a tempore quo non extat memoria talis extitit et adhuc existit, quod statim trahat versus meliorem, hoc est, versus rem emptam et eodem modo venduntur dicta averia archiepiscopis, episcopis, comitibus, baronibus et aliis quibuscumque in dicta civitate, huiusmodi averia ementibus, et ista consuetudine et modo ponderandi antecessores nostri usi fuerunt et nos hactenus usi sumus ac dominus rex noster libertates et liberas consuetudines nostras, quas ex concessione progenitorum suorum regum Anglie habemus et quibus huc usque usi sumus, nobis per cartam suam confirmaverit, per quod, consuetudines civitatis sue usitatas et approbatas per concessionem extraneis mercatoribus nunc factam in dampnum et prejudicium civium suorum et etiam magnatum nec non communitatis regni sui mutare non possumus nec debemus: preterea, cum in carta eis facta contineatur, quod ponderatio, in forma in dicta carta contenta, fiat ubi contra dominum loci aut libertatem per ipsum dominum regem vel antecessores suos concessam illud non fuerit, sive contra villarum et feriarum consuetudinem hactenus approbatum." Delpit, *op. cit.*, p. 40. A translation of this is to be found in R. R. Sharpe, *Calendar of Letter-Books, Letter-Book C*, London, 1901, p. 127 f.

² *Ibid.*

berwe, Henry de Colon', Lambekyn Heved, Roland de Colonia, Henekin atte Nwe, merchants of Almaine, and John de Pitleacre, Francis de Gene, Antonin de Gene, John de Cotesawe, Nicholas de la Spade, Bartholomew Lespicer, John de Perem, Ymbert de Luka, Peter le Rous, and Chonel de Luka, merchants of Lombardy and Provence, that all merchandise of weight (mercandise *averii ponderis*), as of wax, almonds, rices (riseis), copper, tin, and the like, which are weighed by the balance, shall for the future be weighed evenly; that the weigher remove his hands therefrom, so that the weigher, when he weighs, in weighing place the balance even and remove his hands therefrom, so that neither to the seller nor to the buyer he shall appear to give or take anything but what is fair in any way; and that each hundred of such grosses (*grossis*) of aver de pois (*averii ponderis*) shall contain 112 pounds, and each hundred of small spices, viz., ginger, saffron, sugar, maces (*mazis*), and others of the kind which are sold by the pound (per libram), shall contain 104 pounds. And the weigher was enjoined not to weigh otherwise under penalty of imprisonment, etc. And further it was forbidden that any merchant, stranger, or free (*privatus*), should sell or buy otherwise than by the balance, and not by retail (*ad detall'*), under penalty, etc. Saving always the estate of the lord the King and of his Wardrobe when they wish to weigh that they weigh as before has been accustomed, if they please, until it be ordained otherwise by the King himself and his Counsel, etc. And this ordinance was made on Monday the eve of St. Martin [11 Nov.], the third year of the reign of King Edward, son of King Edward [A.D. 1309]."¹

¹ Letter-Book D, p. 209 f.

It is clear enough that the grocers were those who sold the *grosses*, as mentioned above, and that, at least popularly, they were so named from the law of 1309. Indeed, the first mention of a grocer is from the year 1310: "John Gut' grosser (*grossarius*) of Soperslane."¹ Formerly they were called pepperers; now the name of grocers slowly supersedes the older appellation. In 1312 pepperers, corders, ironmongers, apothecaries, and others are included among those who busy themselves with *aver de pois* (*se intro-mittunt de averio ponderis*).² In 1345 the Mistery of the *aver de pois* (*mester' averii ponderis*) apparently included all the above-mentioned ones, tho Sharpe speaks of them as pepperers.³ In 1319 Thomas de Enefeld is called a pepperer,⁴ in 1328 he is chosen into the Mistery of Grocers,⁵ and in the place of the spicerers we at the same time hear of apothecaries, and again, in 1376, London had a mayor who was a pepperer, and a sheriff, a grocer.⁶

The forestalling of commodities is, of course, older than the origin of the grocers, so, for example, the City of Lincoln in 1315 asked for a remedy against the merchants who bought up fish and other eatables and wares and then sold them to the people at an enormously increased price.⁷ In 1363 the same complaint is directed against the merchants called *grocers* because of their *engrossing* all kinds of vendable goods (*les Marchantz nomez Grossers engrossent*

¹ Letter-Book B, p. 250.

² Letter-Book D, p. 296.

³ Letter-Book F, p. 127.

⁴ Letter-Book E, p. 126.

⁵ *Ibid.*, p. 232. But all these names should be verified, as it is not clear from Sharpe's use of the words what the original may have been.

⁶ *Ibid.*, p. 288.

⁷ Rolls of Parliament I, p. 290.

toutes maneres de Marchandies vendables)¹, but it is absurd to assume, as has been done by philologists and economists, that the grocers were called so from their engrossing wares. The opposite supposition would have been nearer the truth, but in reality the relation between *grocer* and *engross* is as real as that between "broker" and "break," or "broker" and *broc* "the tap," as has been suggested by the *Oxford English Dictionary*. My task is done as far as the ascertainment of the origin of the word *grocer* is concerned, — the subsequent history of the grocer belongs to economic history proper.² But I still have the important problem before me of elucidating the origin of the grocer's trade and of explaining a number of terms connected with it, such as *avoir de pois*, *statera*, *grossum*, for which one would in vain look for proper treatment in dictionaries and economic histories.

At the end of the ninth century Leo the Wise of Byzantium published an edict on the corporations of Constantinople³ which is a precious relic by which the origins of mediaeval trades may be ascertained. The chapter on the regraters (σαλδαμάρμοι)⁴ runs as follows: "The regraters shall open shops (εργαστήρια)⁵ throughout the city, in the streets and villages, so as to make it easy to find those things which are needed for the sustenance of life. Let them sell meat, dried fish, flour, cheese, honey, oil, every kind of

¹ Ibid. II, p. 277.

² J. A. Kingdon, in his *Facsimile of First Volume of MS. Archives of the Worshipful Company of Grocers of the City of London* [London], 1886, Part I, p. 14, completely overlooks the laws of 1303, 1305, and 1309, and so distorts the origin of the grocers.

³ Le livre du préfet, publié par J. Nicole, Genève, 1893, in *Mémoires de l'institut national genevois*, vol. xviii.

⁴ Ibid., p. 47, f.

⁵ On the relation of this word to *regrater*, see my *Byzantinisches I*, in *Zeitschrift für romanische Philologie*, 1910.

vegetables, butter, dry and liquid pitch, resin, hemp, flax, gypsum, vessels, tubs, nails, and all other things which are sold by the steelyard (*καμπανοίς*) and not by the balance (*ζυγοίς*). They are not permitted to deal in other goods, of the spicerers (*μυροπικτήν*), soapchandlers, linendrapers, taverners, or butchers, in any shape or manner. . . . If a regrater be caught playing a trick in selling, or increasing the established price, let him be fined ten nomismata. . . . The regraters should watch the imported wares, such as appertain to them, so that one not belonging to their corporation who may store them up against a time of scarcity be pointed out to the prefect and punished by him. Regraters should sell their wares at retail (*λεπτομερῶς*) in such a way as to gain no more than two miliarisia on each nomisma. If, however, upon examination of their weights, it be found that they have gained more, they should be beaten and shaved and forbidden to ply their trade."

The regulation of the spicerers' trade is as follows¹: "Every spicerer should have his own place, without tricking his neighbor. Let them so treat one another that the goods be not lowered in price or too much divided up by some. Let them not have any regrater's or other vile wares in their shops, for there is no union between ill-smelling and well-smelling things. Let them sell pepper, spikenard, cinnamon, lignaloe, amber, musk, incense, myrrh, balsam, and all other things which pertain to the spicerer's and dyer's trade. . . . Let them not accumulate the wares for the sake of making profit in time of dearth, nor immoderately increase the price. Nor may the merchants who import them stay longer than three months, but they must return home as quickly as they have

¹ *Ibid.*, p. 41.

sold their wares.¹ . . . None of them is permitted to buy steelyard or regrater's wares (καμπανικὸν ἔσπερον ἢ σαλδαμαρικὸν εἶδος), but only those which are bought by the balance."²

Species makes its appearance in Late Latin in the sense of "goldware," "clothes," and "spices." In all of these meanings it is the translation of Greek εἶδος, which is frequently met with in the papyri from the second century on, and in the sense of "spices" it is recorded by Stephanus from Hippocrates, in the fifth century B.C. I suspect that in this latter sense it is an Eastern trade word, either a translation or adaptation of some foreign word, and I tentatively suggest Chinese *wei-lei*, lit. the smelling kind, aromatica species, the common word for spices, as the basis for εἶδος. This εἶδος refers in our Byzantine source to the wares of the spicerer as well as the regrater,³ but, as in the East, so in Byzantium, the first, being precious, were weighed with the more delicate balance, whereas the latter were weighed by the less precise beam of unequal arms, hence the Venetian division of Eastern goods, more particularly spices, into *specie grosse* and *specie menude*, and thus *grossum* came to be identified with the less costly spices and victuals.

¹ This restriction against the foreign merchant is universal throughout the early Middle Ages, hence the origin of the Hare de drap. Here is one striking case of the end of the thirteenth century in England: "It petunt quod Rex appon' remedium de eo quod alienigene Mercator' dominantur et ditantur de Mercandis in Civit' et civis depauperantur, qui onera sustinent quotiens necesse est: non enim consueverant morar' ultra quadraginta dies, infra quos solebant vendere aliis de regno, qui de lucro vivebant, Et nunc extranei illud lucrum asportaverunt. — Rex intend' quod Mercatores extranei sunt ydonei, et util' Magnatibus, et non habet consilium eos expellendi" (ann. 1290). Rolls of Parliament, vol. 1, p. 55.

² The chandlers, soapchandlers, and hog merchants also used steelyards.

³ In the Rhodian Law (W. Ashburner, *The Rhodian Sea-Law*, Oxford, 1909, p. 36), εἶδος has the meaning of goods transported by a ship; in the Basilica lib. XI, tit. II (ed. Heimbach, vol. 1, p. 681), τροφήματα εἶδη is translated by "species ad victum necessariae."

The name of *aver de pois* applied to such spices and victuals has arisen through a series of translations or, rather, mistranslations. Recent studies on the weights of the Middle Ages¹ contain some serious oversights on account of the misconception of what constituted a *pondus*. While it is quite true that in Carolingian times a *pondus* became in some way identified with the *libra*, the pound, this was not universally the case. It either preserved the classical meaning of "weight, burden" or more often became identified with the weighing machine and its system of relative weights. When a charter of the year 1185 says, "tres librae cerae ad *parvum Pondus*, vel una ad *magnum Pondus*,"² it is obvious that the large and small beams are meant, and that the large beam in this case had its arms in proportion of 1 to 3. So, too, *pondus* means the great beam in "et etiam *pondus* nostrum de Antissiodoro (in perpetuum et gratis donamus)." ³ At Montpellier the lowest weight of the *pondus* was 8½ lbs., "unum certum *pondus*, ponderans octo libras et dimidiam."⁴ The same meaning was given in Sicily to *pondus*,⁵ with which cheese, meat, wool, flax, hemp, cotton, and all other *gross* wares were to be weighed. This *pondus* was there also called *quartaronus*, *quaranteno*,⁶ *cantaro*. But the *cantaro* is not, as is generally supposed, identical with the *centenarium*. In Genoa some things were early in the

¹ B. Hilliger, Studien zu mittelalterlichen Maassen und Gewichten, in *Historische Vierteljahrschrift*, III (1900); P. Guilhiermos, Note sur les poids du moyen age, in *Bibliothèque de l'école des chartes*, LXVII (1906).

² Du Cange, sub *pondus*.

³ Germain, op. cit., p. 308 (ann. 1296).

⁴ *Gallia christiana*, vol. iv, Instrumenta, col. 102.

⁵ See above, p. 265, n. 2.

⁶ G. Resasco, *Dizionario del linguaggio italiano storico ed amministrativo*, Firenze, 1881, sub *cantarata*.

twelfth century weighed by the *cantarius*, while others, apparently grosser goods, by the *centenarium*, or hundredweight.¹ According to a tariff of the year 1204 a threefold distinction is made, for some goods are sold by the *cantarius*, others by the *centenarium*, others again by the pound.² In addition, there are also other names for the beam, *rubus*,³ *spola*,⁴ *cristo*,⁵ and the French and English *trone*, which need to be investigated. The usual equivalent for *pondus* was *pensum* so that *averium ponderis*, which is an exact translation of the *καρτανικὸν εἶδος* of the Edict, is rendered in French as *aver de pois*, Italian *avere di peso*, that is, what originally meant "the goods of the beam" came to be identified with their manner of weighing. A far more common name for the beam was Lat. *statera*, Italian *stadera*, from which, no doubt, Middle English *stillere*, *stellere*, English *steelyard*, is derived. Thus, the history of *grocer*, *retail*, *steelyard*⁶ shows that the grocer's trade in England is chiefly due to the activity of Italian merchants, and that the Italian grocer's trade itself was derived directly from Byzantium.

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¹ Hist. pat. mon., vol. vii, cols. 71, 72, 513.

² "De omnibus mercibus que renduntur ad pensum *cantarii* at *centenarii*, de omnibus mercibus et speciebus que uenduntur ad pensum libre." Ibid., col. 521. For various weight values of *cantarius* and *centenarium* see Schaube, op. cit., p. 814 ff.

³ Ibid., cols. 68, 71, 103, vol. xvi, col. 2001.

⁴ Ibid., vol. xvi, col. 2001.

⁵ Ibid., vol. vii, col. 202.

⁶ See also the history of the apothecary and regrater in my *Byzantinisches*.

RAILWAY RATE THEORIES OF THE INTER- STATE COMMERCE COMMISSION. II

SUMMARY

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IV. DISTANCE

DISTANCE as a factor in rate making is of importance only as it affects the cost of transportation. It is, of course, never true that costs are in exact proportion to the distance, but it is true that the greater the distance freight is transported, the greater is the cost of carrying it. We might, therefore, have rightly considered distance under the heading of cost of service. But owing to the emphasis which the Commission has often placed upon it as an element in rate making, as well as because there is a respectable school of economists and publicists who believe that distance should play a larger part in rate making than railway men are inclined to accord to it, we shall here give it separate treatment.

The original members of the Commission, very soon after they had begun their work, made it plain that they had no intention of adopting distance as the sole measure of the reasonableness of a given

rate. In the case of the *La Crosse Manufacturers' & Jobbers' Union v. the Chicago, Milwaukee & St. Paul Railway Company et al.*¹, complaint was made to the general effect that rates on certain commodities were not in proportion to the mileage covered by their transportation. To this complaint the Commission made answer as follows:—

It is a matter of general history that when the act to regulate commerce was pending in Congress the mileage basis was suggested but not adopted. Many circumstances sometimes enter, and sometimes compel a carrier to make rates on one line proportionately less than are made on another. The volume of business, the strength of competing forces, the direction of traffic, the convenience of exchange, the relations of carriers to each other, and a multitude of other circumstances, have or may have an important bearing.

While thus disclaiming any desire to put in force a distance tariff, the Commissioners have made it equally plain that distance as an element in fixing railway charges must not be disregarded by carriers, and that upon the railroads rests the responsibility of justifying departures from the rule that rates should increase with the distance travelled. "Distance is not always the controlling element in determining what is a reasonable rate," say the Commissioners, "but there is ordinarily no better measure of railroad service in carrying goods, than the distance they are carried."²

The Commissioners do not, of course, mean by this statement that rates should ordinarily be *proportional* to distance. To fix rates in this fashion would be to disregard the very obvious fact that the terminal expenses remain the same whether the freight is transported one mile or many miles. The general

¹ 1 I. C. C. Rep. 629; 2 I. C. R. 9.

² *Abbott v. East Tenn., Va. & Ga. R'y. Co.*, 3 I. C. C. Rep. 225; 2 I. C. R. 609.

rule to be applied in determining the extent to which distance should cause an increase in the railway rate has been repeatedly set forth by the Commissioners and it shows very clearly that these gentlemen attach importance to distance only so far as it reflects cost of service. An explicit statement of the fact that distance as an element in transportation owes its importance to cost of service is found in a case¹ where the complainants urged in behalf of their claim the general principle accepted by the Commission that the ratio of rates should decrease with the increase of the distance travelled. In answer to this the Commissioners said:—

This principle is generally acknowledged when the rates are based upon distance and cost of handling and are not affected by other modifying conditions, and its justice arises from the very obvious fact that the expense of transportation does not increase in proportion to the distance, many of the elements which unite to make up the cost of handling freight being the same whether the terminal points be more or less widely separated.

When we turn to a consideration of the cases in which the Commission has made use of distance as an important, if not controlling, element in fixing rates we find that these cases naturally fall into two groups: (1) Those in which the general rule is followed, that as distance increases the aggregate charge should increase but the ton-mile rate should decrease; (2) those in which the importance of distance as a factor in rate making is admitted, but the general rule stated above is modified to meet certain conditions and circumstances.

¹ *Lincoln Board of Trade v. Burlington & Missouri River R. R. Co. et al.*, 2 I. C. C. Rep. 147; 2 I. C. R. 95. Cf. the similar statement in *W. B. Farrar v. East Tenn., Va. & Ga. R'y. Co.*, 1 I. C. C. Rep. 480.

1. *Rates Increase with Distance*

A case which may be regarded as typical of the entire group is that of *The Commercial Club of Omaha v. The Chicago, Rock Island & Pacific Railway Company et al.*¹ Omaha and Kansas City, it was shown, were competitors for the trade of the west, southwest and northwest. Because of this competition these cities received the same rates to and from most points in their common territory. For this reason it was claimed on behalf of Omaha that she should receive the same rates to certain points in Texas as were given to her rival, altho Omaha is about 195 miles farther from these Texas towns than is Kansas City and traffic to and from Omaha must pass through Kansas City.

The Commissioners did not discuss the question as to whether Omaha and Kansas City were entitled to the same rates to other points but they held that the existence of such equality in rates constituted no reason why distance should be ignored in fixing rates to the Texas towns. They declared that carriers had "no right to disregard distance and natural advantages, in order to bring about commercial equality," and they cited their earlier decisions to show that this had always been the attitude of the Commission. Some of the complainants had admitted that the rate to Kansas City from the Texas towns was a reasonable one and the Commissioners said that, if this were so, "the charge of the same rate for the continuous haul 195 miles farther on to Omaha would make no allowance for the expense and value of that additional service."

¹ 6 I. C. C. Rep. 647.

Competition of the same sort was found to exist¹ between Cincinnati and Louisville in the distribution of merchandise to points in the south and southwest. Cincinnati complained that differential rates of from two to ten cents per 100 pounds were given to Louisville as compared to Cincinnati and that this constituted an undue preference in favor of Louisville since the two towns were rival distributing centers.

The carriers defended the differentials on the following grounds: (1) Cincinnati being on the north bank of the Ohio river, the expense of crossing the river, sometimes on toll bridges, made it justifiable to charge her higher rates than were given to Louisville on the south bank of the river. (2) The distance from Cincinnati to the south and southwest was greater than from Louisville. (3) Cincinnati enjoyed a better freight rate than did Louisville on goods brought from the east and could therefore afford to pay a higher rate on these articles when they were sent forward for distribution.

The first point made by the defendants had to do directly with cost of service and, altho it was recognized by the Commissioners as legitimate, we need not now consider it. Concerning the second argument, the Commissioners said:—

It is undoubtedly true that there are many instances in which the element of distance may be overcome by other considerations, but it is equally true that this Commission has always insisted that distance was an important element in the determining of rates, and *in the absence of other influences a controlling element*. No circumstances are shown by the complainants which should eliminate that element from consideration, or counteract its influence.

The Commissioners did not recognize the third argument made by the defendants as legitimate, but

¹ Freight Bureau of Cincinnati Chamber of Commerce v. Cin., N. O. & Tex. Pac. R. R. Co. et al., 7 I. C. C. Rep. 180.

their answer nevertheless serves to emphasize the importance attached to distance as a determining factor in this case.

We do not give much weight to this consideration, as Cincinnati is entitled to the benefits of location; the fact that it enjoys exceptional advantages in one respect is no reason why it should be subject to discrimination in some other respect. If Cincinnati by reason of its situation can obtain a better rate than Louisville upon merchandise which it brings in for distribution to this southern territory, that is the good fortune of Cincinnati and affords no excuse for an unjust rate upon merchandise when shipped out. There is, however, a degree of justice in the claim that the same rule which is applied in favor of Cincinnati in respect to incoming freight should be applied against it on outgoing freight and that if it obtains the cheaper freight rates because of being situated near the source of its supplies, it ought in the same manner to pay a higher rate by reason of the fact that it is further from the territory in which it sells.

In spite of the emphasis placed on distance, it will be noticed that the Commission is careful to consider it, in both the above cases, as merely one element in the cost of transportation.

The famous Eau Claire case¹ is of interest to students of railway rates chiefly for other reasons than those we are now considering. But it offers a good illustration of the importance which the Commission is inclined to attach to distance and to the natural advantages of location as elements in rate making.

With reference to distance the defendants had put forth the claim that Eau Claire was paying a lower rate for the transportation of lumber than were the Mississippi river towns, La Crosse and Winona, "in proportion to their respective distances from the common market," which in this case was certain cities on the Missouri river. Since her ton mileage

¹ *Eau Claire Board of Trade v. C. M. & St. P. R. R. Co. et al.*, 5 I. C. C. Rep. 264; 4 I. C. R. 65.

rates were less, Eau Claire, it was said, had no reason to complain. To this the Commissioners replied as follows: —

The doctrine that transportation charges should be in proportion to the distance between different points, when these distances are greatly dissimilar, has never been advanced by the railroads or recognized by the Commission. It may be the rule to which tariff construction will some time approximate, but there is no opportunity for its application under the present conditions. The fixing of a rate for a thousand miles at twice the sum prescribed for half the distance would be most arbitrary and intolerable. . . . The whole practice of rate making is opposed to the principle of exact proportion, and even in theory there is little reason for its adoption. But distance, nevertheless, is an ever present element of the problem of rates, and not unfrequently a controlling consideration. Where all the distances brought into comparison are considerable and the difference between them relatively small, we shall expect substantial similarity in their respective rates unless other modifying circumstances justify a disparity.

Probably most of the cases in which the Commission has felt obliged to insist upon the recognition of distance as an element in rate making have arisen under the fourth section of the original act to regulate commerce which contains the well-known long and short haul clause. Carriers have advanced a great variety of considerations to show that they should be relieved from the operation of this section. The Commission has invariably taken the position that upon the carrier falls the burden of proving that dissimilar circumstances and conditions exist in the case of the long haul which make it necessary to charge less than for the short haul. In the absence of such dissimilar circumstances and conditions the element of distance must be considered as a controlling factor. This is made clear in the case of *The Farrar Lumber Company v. Southern Railway Company et al.*¹, where the complaint was to the effect that rates on lumber

from Dalton, Georgia, to certain points in Virginia and West Virginia were higher than to other points further distant on the same line. The carriers pleaded competition as a reason for making the low rates on the long distance traffic. The Commissioners, after investigation, decided that the plea was not warranted under the circumstances and said: —

The rate per ton-mile is not always the measure of a reasonable rate and rigidly applied would make distance alone the gauge for transportation charges, but it is always valuable as affording a basis of comparison for relative rate burdens.

Even when the conditions surrounding the long haul are dissimilar from those present in the case of the shorter haul, they may not be such as to warrant the carriers disregarding altogether the question of distance. In the case of *S. Marten v. The Louisville & Nashville Railroad Company*², complaint was made that higher rates were charged for transporting lumber from certain small places in Tennessee to Detroit, Michigan, than were charged from Nashville to Detroit, tho the points in question were from 23 to 100 miles nearer Detroit than was Nashville. The carriers defended the lower rates from Nashville on the basis of both rail and water competition. Particular emphasis was placed on the competition by rail, and the defendants seemed to think that the decision of the U. S. Supreme Court in the Troy case (168 U. S. 144) had made it unnecessary to consider the element of distance where competition existed. The Commissioners admitted that competition existed at Nashville, but said that the water competition "would scarcely be a potent factor if the rates were somewhat higher"; and as to the rail competition they said that the defendants made the rate at Nash-

¹ 11 L. C. C. Rep. 640.

² 9 L. C. C. Rep. 581.

ville and "other rail carriers there simply follow that rate." A decision of the United States Supreme Court¹ was quoted to show that competition to be relied upon must "be not artificial or merely conjectured but material and substantial."

As to the justice of the carriers' claim that distance might be utterly disregarded whenever it was shown that competition existed, the Commission quoted with approval one of its early decisions in which its chairman, Judge Cooley, had said that "while the act does not require all rates to be proportional [to distance] it nevertheless makes the element of proportion an important one when the rates from any locality are to be determined." The application of this principle to the case under consideration is stated as follows: —

Under these circumstances, the rule that after substantial dissimilarity of circumstances and conditions has been shown, the longer distance rate cannot in any case or to any extent be considered by way of comparison in determining whether or not the shorter distance rate is unreasonable or unduly prejudicial, particularly when as, in this case, competition and other compulsory conditions are not found to justify the whole disparity between the shorter and longer distance rates, would be to reject a most appropriate and necessary test of the reasonableness and justice of railway charges. It seems to us that in a case involving shorter distance charges higher than those to and from long distance points, the carrier cannot rightfully claim justification for a greater dissimilarity in the rates than may be indicated by the ascertained dissimilarity in circumstances and conditions.

This case and the Eau Claire case both show that the Commission is inclined to attach much importance to distance as a measure of the reasonableness of rates from two or more competitive points whenever these competitive points are in the same territory and are about equally distant from a common market.

¹ *Louisville & Nashville Railroad Company v. Behlmer*, 175 U. S. 648.

2. *Modifications of the distance principle*

Altho laying much emphasis on the general rule that the aggregate rate continues to increase as the distance covered in transportation increases, while the ton-mile rate constantly grows less, the Commissioners are willing to admit that this rule cannot always be applied even in those cases where distance itself is not to be ignored as an element in rate making.

One instance in which "the rule that the rate per ton-mile must be less for the greater distance" need not apply is where competition with a water route (or a railroad not subject to the act) is present in the case of the short haul, but not present in the case of the long haul.¹ Such instances are less frequent than those in which the competition exists in case of the long haul, but they are occasionally found.

In such instances the Commission has held that competition in the case of the short haul may make the rate unusually low, "often too low to be treated as a fair criterion for points beyond." The railroad having a long mileage to a given point may be met by a railroad having a much shorter mileage, and setting the rate which must be met if the longer road would share the business.

When the given point is passed [the longer road] may fairly increase its charges with some consideration of the absolute distance travelled by its own lines from the originating point and in a ratio more rapid than the proportionate charges would have otherwise shown had it been able to grade its rates continuously throughout its line. The same effect is at times produced by water transportation, competition, and other controlling causes.²

¹ *Business Men's Association of the State of Minnesota v. C., St. P., M. & O. R'y. Co.*, 2 I. C. C. Rep. 52; 2 I. C. R. 41.

² *Lincoln Board of Trade v. Burlington & Missouri River R. R. Co. et al.*, 2 I. C. C. Rep. 147; 2 I. C. R. 95.

In determining whether or not the general rule should be held applicable we must also consider, say the Commissioners, the extent of the traffic and the character of the country traversed.¹ The ratio of rates charged through sparsely settled districts cannot decrease in proportion to the distance without depriving the carrier of necessary revenue; a region whose interests are wholly agricultural does not offer the possibilities of tariff reduction that is afforded by regions which are largely fed by mineral resources, quarries, and manufactures.

The Commission has also decided that tho mileage is an element of importance in making rates, the principle that the ton-mile rate decreases with the distance travelled "cannot as a rule be considered as a test in railroad operations in case of local rates,"² and local rates need not necessarily correspond with the division of the joint through rate over the same line.³

It has also been held that whenever a comparison is made between distances varying greatly in length, the ton-mile rate in one case need not necessarily be regarded as a measure of the reasonableness of the rate in the other case. That this is the Commission's point of view was shown by its utterances in the *Eau Claire* case, but is more fully brought out in the case of the *Board of Railroad Commissioners of the State of Kansas v. Atchinson, Topeka & Santa Fe Railway Company et al.*,⁴ a case which is peculiar in this respect, that the principle which the complain-

¹ *Ibid.*

² *Business Men's Association of the State of Minnesota v. C. & N. W. R'y Co.*, 2 I. C. C. Rep. 73; 2 I. C. R. 43.

³ *H. McMorran and E. B. Harrington v. Grand Trunk R'y Co. of Canada et al.*, 3 I. C. C. Rep. 252; 2 I. C. R. 604.

⁴ 3 I. C. C. Rep. 304.

ants wished to have applied in one instance they were unwilling to see made applicable in the other matter made the subject of dispute.

The complaint was (1) that lower ton-mile rates were given from the Kansas grain fields to Galveston, Texas, than were given on grain shipments to Kansas City and St. Louis, and (2) that lower ton-mile rates were given on Kansas grain sent to the Atlantic seaboard than on that sent to the Gulf ports which were the natural points of export for Kansas grain. The Kansas Commissioners asked that the same ton-mile rates be given to Kansas City and St. Louis as were given to Galveston, and that in turn the Galveston rate be not higher than the rates to the Atlantic seaboard. Concerning the Kansas City and St. Louis rates the Interstate Commerce Commissioners said: —

Distance is undoubtedly a factor, and perhaps ought to be a much more important factor, in the determination of rates, but in the present case where the distances from the grain fields of Kansas to Kansas City, St. Louis, and Galveston vary from 100 to 1000 miles, any attempt to adjust the rates on grain to those cities upon the sole basis of the rate per ton per mile would be impracticable.

The Commissioners were also unwilling to admit the claim of the complainants that the Galveston rates should be made as low as those to the Atlantic ports.

If a lower rate per ton-mile is made toward the east than toward the south, it is for the purpose of enabling the same grain to reach the same foreign markets by a different route and through different intermediate markets. The grain producer of Kansas has a satisfactory rate to the foreign market through Galveston. Can it be claimed that he is injured by a rate which gives him two routes instead of one to the ultimate market and two intermediate markets instead of one?

The reader has doubtless observed that in all these cases in which the Commission has emphasized dis-

tance as an influential factor in the determination of a rate, it has been because differences in distance seemed to express differences in the cost of service. Tho it may not be so obvious in cases where the distance principle has been modified or held to be not the controlling factor, the Commissioners have nevertheless had the cost of service principle in mind. The cases mentioned have had to do either with local rates, where costs of handling made the rates disproportionately high, or with low rates which were forced on the carrier by the competition of other carriers, either rail or water. A little reflection will show that the low rates in these latter cases have been determined by the cost of conducting the business by the cheaper route. Viewed from purely an economic standpoint it may be questioned whether the more expensive route should have been allowed to participate in the traffic under such circumstances. Over this matter, however, the Interstate Commerce Commission has had no control. The act to regulate commerce was enacted by a body of men who believed in giving full scope to the principle of competition and the Federal courts have fully sustained them in this position, even in cases where the Commission has felt that competition was unwarranted.

V. NATURAL ADVANTAGES OF LOCATION

The question as to how far, in the making of rates, recognition should be given to the natural advantages possessed by a given place for the production or marketing of certain commodities has received much discussion by the Commission, and some of its most important decisions have been based upon the principle here involved. The practice of the railroads has

often been to ignore these natural advantages; at other times the carriers have attempted to equalize them. This result, tho sometimes due to competition between the railroads themselves, has been due more often to competition between markets or between places of production. The carrier leading to a certain market or from a certain center of production has felt pressure to make rates as low as, or lower than, those given to competing centers of trade or production. This concession by the carrier has in turn led to efforts on the part of other places to induce the roads serving them to reduce rates so as to meet this competition. The final result has oftentimes been that the carriers have entered into arrangements whereby they agree to equalize the advantages of competing towns by fixing the rates in inverse ratio to the natural advantages of these towns, enabling all competing localities to market their products at the same prices at the same or different points of distribution.

The Interstate Commerce Commission has always been slow to admit the claim of the railroads that it was necessary and proper to make such rates as would equalize the natural inequalities of competing points and put them all on an equal footing in the common market. "A place is entitled to its natural advantages," say the Commissioners, "and a carrier may not deprive it of these advantages which fairly belong to it and because of which investments have been made at this point for the purpose of carrying on production in a more profitable manner than could be done elsewhere."¹

A little reflection will show that the principle of making rates which recognizes the right of a place

¹ *Imperial Coal Company v. Pittsburg & Lake Erie Railroad Company et al.*, 2 I. C. C. Rep. 618; 2 I. C. R. 436.

to its natural advantages is nothing more than a corollary of the cost of service principle. Other things being equal, a place having natural advantages for the production of a given commodity will produce that commodity and will be able to undersell other places, unless the carrier charges more for transportation from this point to the common market than is charged from competing points of production. Cost of production must, of course, include the cost of transportation and if a place which possesses advantages for the production of a commodity is nevertheless at a disadvantage as compared to its competitors, owing to greater distance from the market, its apparent advantages are offset by the greater cost of reaching the market. To allow a railroad to make higher charges from the more distant point under such circumstances is quite a different matter from acknowledging the carrier's right to make such charges when there is no greater cost of transportation.

The Commission has been consistent in its application of the principle that a place is entitled to the full advantage to be derived from a favorable geographical situation, but has insisted that this must not be construed to mean that a place is entitled to monopolize a given market, or to raise prices in that market above the cost of securing commodities elsewhere. In other words, natural advantages mean differential advantages, not monopoly advantages. The cases coming before the Commission which afford an illustration of the application of this principle may be divided into four classes: (1) Where the natural advantages are due to lower costs. (2) Where they are due to a shorter distance covered in transportation. (3) Where group rates are involved. (4) Where the natural advantages result from competition.

1. *Natural advantages due to lower costs*

In the case of the *Boston Chamber of Commerce v. the Lake Shore & Michigan Southern Railroad Company et al.*¹, the petitioners asked that the railroads from the west be required to make the same rates on goods transported from Chicago and other western points to Boston when these goods were intended for domestic consumption as when intended for exportation. To understand the case fully, it must be said that, in an earlier case² which had come before the Commission, Boston exporters had asked that their city be given the same rates on goods intended for export as were given to New York and had urged that unless this were done Boston would lose its export trade. The Commissioners, for reasons not necessary to relate here, had made this concession to Boston. The Boston Chamber of Commerce was now using the concession as a basis for demanding that the same rates should be made on *all* commodities sent to Boston, whether intended for exportation or for domestic consumption. The argument of the petitioners was that the cost of transporting the commodities was the same, regardless of their use, and that the carriers made no such distinction between domestic and export traffic at New York, Philadelphia, and other places.

The Commissioners refused to allow the request of the petitioners and declared that cost of service was not the main consideration in fixing rates. "The element of cost of service which may at one period have been recognized as controlling in fixing rates has long ceased to be regarded as the sole or most important factor for that purpose."

¹ 1 I. C. C. Rep. 436; 1 I. C. R. 754.

² 1 I. C. C. Rep. 24.

The real grounds for making lower rates to New York than to Boston, said the Commissioners, are the natural advantages possessed by the former place over those possessed by the latter.

If differences in the condition of traffic to two or more points exist which materially affect the cost or value of the service, it would scarcely be reasonable to require a carrier to disregard these differences and make good to every community the disadvantage of situation or other disadvantages.

Altho the Commission denies the validity of the cost of service principle in this case when applied to the question of relative rates on domestic and export traffic, it will be noted that New York's advantage of situation as compared to that of Boston is shown to rest on differences in the cost of transporting goods to the two cities. This is brought out more fully when the Commission recites the points in which New York's situation is declared to be superior to that of Boston: (1) There is more switching involved at Albany in the case of Boston traffic. (2) The heavy grades of the Boston and Albany railroads necessitate smaller trains. (3) The cars are detained longer in Boston than in New York. (4) The distance from Albany to Boston is 56 miles greater than to New York. (5) The volume of business to Boston is smaller and "the universally accepted principle of railroad transportation that a very large traffic can be profitably conducted at lower rates than a relatively smaller traffic" applies. (6) Competition by way of the Great Lakes, the Erie Canal, and the Hudson river exists in the case of New York and compels the carriers to accept a lower rate to that city than they would be willing to accept in the absence of such competition.

All of these points, with the exception of the last, have to do with differences in the cost of service.

Together they give New York a decided advantage over Boston, and according to the Commissioners they are "physical facts constituting inequality which the carriers by rail are not required to make good to the less favored locality at their own expense."

The low rates given to Boston on her export traffic were declared to constitute an exception to the ordinary rate and to be a distinct *concession* on the part of the carriers to put Boston exporters on an equality with their competitors at New York, Philadelphia, and Baltimore.

We have already observed, under the heading of "Distance," that in the *Eau Claire lumber case*¹, the Commissioners held that, Eau Claire being about the same distance from her market, the Missouri river towns, as were her competitors, La Crosse and Winona, it was incumbent on the carriers to consider distance as an element to be taken into account in determining the relative rates from these competing points of production. But the main thing emphasized by the Commission in its decision was the fact that Eau Claire had such natural advantages for producing and shipping lumber that she could produce and market this commodity at less cost than could her competitors and that the system of rates in force deprived Eau Claire of these natural advantages in order that competing localities might meet her on equal terms in the common market. The favorable situation enjoyed by Eau Claire is thus described by the Commission: —

Eau Claire appears to be adapted by location and in other respects for the manufacture and sale of lumber: it has a natural booming ground or place for the safe storage of logs, cheap transportation

¹ *Eau Claire Board of Trade v. C. M. and St. P. R'y. Co. et al.*, 5 I. C. C. Rep. 264; 4 I. C. R. 65.

from the stump to the mills, proximity to the timber, and locations suitable for mills and yards. Being situated nearer the pine forests, the sources of timber supply, and at the confluence of two rivers which penetrate those forests, the Eau Claire and Chippewa, it appears to have natural advantages over its neighboring competitors [La Crosse and Winona]. . . . After lumber is in the raft, the cost of its transportation by water down the Mississippi is less than for the same distance by rail; but, including the rafting and preceding expenses, the testimony is to the effect that lumber can be shipped from Eau Claire by rail direct to Missouri river markets at as little, if not less, cost than it can be floated to Mississippi river points [La Crosse and Winona] and thence transported by rail to those markets.

The long controversy between the roads as to what differences in the rates on lumber from these competing towns should prevail had been referred by the roads to a gentleman named Bogue, who had been called upon to act as arbiter in the dispute. The decision rendered by Mr. Bogue was in accordance with the principle suggested by his own question: "What rate will enable each line party to this arbitration to place its fair proportion of lumber in the territory under consideration?" This, say the Commissioners, is equivalent to asking, what rate is necessary to equalize the relative disadvantages of location possessed by La Crosse and Winona as compared to Eau Claire? That this was also the understanding of the carriers is shown by the statement of the traffic manager of the St. Paul road that

primarily the object of the Bogue award was to place each line in a position to carry its fair share of the Missouri river lumber, and further to place each manufacturing locality upon an even footing with its competitors If Eau Claire could produce lumber cheaper than Winona or La Crosse, the latter points were to have a lower rate so as to enable them to compete.

The principle thus applied in arbitrating the dispute did not meet with the approval of the Commissioners. They said: —

We are not to be understood as endorsing this principle. On the contrary, we consider it radically unsound. That rates should be fixed in inverse proportion to the natural advantages of competing towns with a view of equalizing commercial conditions as they are sometimes described, is a proposition unsupported by law and quite at variance with every consideration of justice. Each community is entitled to the benefits arising from its location and natural conditions, and any exaction of charges unreasonable in themselves or relatively unjust by which those benefits are neutralized or impaired contravenes alike the provisions and the policy of the statute.

The Commission therefore ordered such a reduction in the lumber rates from Eau Claire as should cause these rates to exceed those from La Crosse and Winona by not more than $2\frac{1}{2}$ cents per 100 pounds. The selection of this particular differential was admitted to be more or less arbitrary and was left subject to correction. But the principle involved was that the rates should be such as to preserve for Eau Claire her natural advantages for securing and handling lumber, and should impose upon her shippers no higher rates in sending this forward to market than were justified by a consideration of the relative distances of Eau Claire, Winona, and La Crosse from the common markets.

In two cases,¹ brought before the Commission by the freight bureaus of Cincinnati and Chicago against certain southern and western roads, and heard together, complaint was made that the roads running south from the Ohio river had so arranged their rates on manufactured goods as to favor the merchants in eastern seaboard territory (north of the Potomac river and east of the Appalachian mountains) and to give to them an "undue and unreasonable preference or advantage" over the merchants in central territory

¹ Freight Bureau of Cincinnati v. Cin. N. O. & Pacific R'y. Co.; Chicago Freight Bureau v. L. N. A. & C. R'y. Co. et al., 6 I. C. C. Rep. 195; 4 I. C. R. 592.

(north of the Ohio river and lying between the Appalachian mountains and the Mississippi river). The evidence submitted showed that the mileage rates on articles in classes one to six inclusive, of the Official Classification, were higher from the eastern territory into the south than from the central territory. The defendant carriers offered as an excuse for this discrimination the existence of water and rail competition from New York, Philadelphia, and Baltimore, but the Commission discovered that the rates from the east were lower than were necessitated by water competition.

The real grounds of the discrimination were found to lie in an agreement made in 1878 by the roads running into the south, the consequence of a long and bitter struggle between the lines from the east to the south and those from the west to the south. In order to end this struggle the Southern Railway and Steamship Association had been formed, whose object was

"to protect to eastern lines the business peculiar to their territory" and to the western lines the business relating to "their peculiar commodities," . . . in other words to secure to eastern lines the transportation of "articles manufactured in the east and in other countries and imported into eastern cities, embraced under the general terms of dry goods, groceries, crockery and hardware" and classified for the most part under the first four of the numbered classes, and to the western lines the transportation of "articles of western produce, comprising the produce of animals and the field" and embraced principally in the lettered classes.

As a result of this agreement rates were so fixed that on commodities produced mainly in western territory an advantage of at least ten cents per 100 pounds was given to the western lines over those from the east, while on articles peculiar to the east rates correspondingly low were permitted to the

eastern lines; all with a view to effect the announced object of the convention.

The Commissioners decided that however plausible may have been the pretext for such a method of adjusting rates in 1878, that justification no longer existed; for "it is estimated that the manufacture, in the central territory, of goods in the numbered classes has increased 100 per cent in twenty years." They were not willing to admit, however, that even in 1878 such an adjustment of rates was justifiable.

It is not the duty of carriers, nor is it proper, that they undertake by adjustment of rates, or otherwise, to impair or neutralize the natural commercial advantages resulting from location or other favorable conditions of one territory, in order to put another territory on an equal footing with it in a common market. Each locality competing with others in a common market is entitled to reasonable and just rates at the hands of the carriers serving it and to the benefit of all its natural advantages.

The Commission, therefore, proceeded to order a reduction of the maximum rates on commodities in classes one to six, inclusive, from Chicago and Cincinnati to southern territory on the following basis:—

The cost of freight in general per ton per mile on the roads south of the [Ohio] river appears to have been for the years named in the tables heretofore given about 25% on an average greater than the cost per ton per mile on the roads from Chicago to the river. The tonnage of the latter roads is also greater than that of the former. Rates from Cincinnati to southern territory from 33% to 50% higher per ton per mile than those from Chicago to Cincinnati and other Ohio river crossings will in our opinion make full allowance for these differences in cost and tonnage, and be at least not unreasonably low as maximum rates.

It appears from this statement that while the Commission concedes the right of a certain territory to the advantages arising from its favorable situation with reference to a market, the degree to which these

advantages are recognized is determined by a strict adherence to the cost of service principle.

Distance, competition, and cost of service are all made use of by the Commission in reaching a decision *In the Matter of the Transportation of Salt from points in Michigan to Missouri River Points*,¹ but the emphasis placed on natural advantages of location makes it desirable to treat the case under this heading.

Salt producers in and around Detroit, Michigan, were inclined to complain of the combination of rates made between a boat line on Lake Michigan owned, or at least controlled, by the International Salt Company and the railroads running from Chicago. These combination rates enabled salt to be carried from its point of production near Ludington and Manistee, Michigan, to its markets on the Missouri river at rates lower than were given to the Detroit producers by the roads leading from that city. The boat line received from 30 to 33½ per cent of the through rate.

In spite of the suspicious elements involved in the case the Commission concluded, after investigation, that this apparently large percentage received by the boat line was justified by the cost of the service which it rendered in connection with the transportation of salt and by competitive conditions over which the roads at Chicago had no control.

The consideration which had most weight with the Commission in causing it to justify the existing rates was the fact that Ludington and Manistee apparently enjoyed natural advantages of production and location which enabled them to produce salt and ship it to the Missouri river at less expense than could producers at Detroit. (1) They were 250 miles nearer to the western markets. (2) They

¹ 10 I. C. C. Rep. 148.

had the advantage of a combined rail and water route, whereas Detroit must ship by an all-rail route. (3) Their costs of manufacturing salt were from 75 to 90 cents less per ton than those at Detroit. (4) They had the advantage of shipping by way either of Milwaukee or Chicago, and hence enjoyed competition on the part of the carriers leading from those cities.

The Detroit producers did not contend that the rates from Detroit were in themselves unreasonable, nor did the Commission so find them to be. The only way, therefore, in which Detroit could find relief was either by a voluntary reduction of rates on the part of carriers transporting salt from Detroit or by a condemnation of the division of the through rate awarded to the boat company. This latter alternative, however, would result in higher rates on salt from northern Michigan and this in turn would raise the price of salt to western consumers. The Commission said: —

We do not conceive it to be our duty to take away from Manistee and Ludington the natural advantages which they enjoy and place them on an equity with Detroit in the manufacture and shipment of salt, in order that the price of that article in western territory may be increased, thereby enabling Detroit producers to do business at a profit in that market. It is the duty of the Commissioners to keep in view not only the rights and interests of producers, but those of the consumers as well.

It can be no duty of the Commission to equalize natural advantages between localities through the adjustment of tariff rates. If any carrier desires to foster languishing industries situated on its line for the purpose of increasing the traffic of such carrier, it has, we think, the right to do so; and if the roads leading west from Detroit, with their connections, wish to make a rate whereby the salt producers of Detroit may be enabled to market their product on the Missouri river, they are so privileged; but this fact can in no wise affect the through rate from Manistee and Ludington, nor can it in any way determine the reasonableness of the division received by the boat line.

It is clear that the decision of the Commission in this case was based primarily on the principle of preserving the natural advantages of location. It is also clear that these natural advantages possessed by Ludington and Manistee were due to the fact that they could produce salt and put it in the Missouri river territory at less expense than could the salt producers in and about Detroit. But since their ability to do so was dependent upon the maintenance of a boat line on Lake Michigan and the granting to this boat line of a large percentage of the through rate, it may not be so clear to the reader that the granting of this large percentage was itself warranted by considerations affecting the cost of service. It may be explained, therefore, that the apparently large percentage received by the boat line covered a number of expense items other than transportation, such as dockage charges, pay for stowing and unloading, cooperage charges, insurance fees, and some minor items. In view of this extensive service performed, the share of the through rate received by the boat line did not appear to the Commissioners to be excessive and it further appeared that the ownership of the boat line by the International Salt Company grew out of the fact that otherwise there would have been a lack of adequate shipping facilities from northern Michigan points.

2. Natural advantages due to distance

Since distance is merely one element in the cost of transportation, it follows that a place which enjoys natural advantages of location because it is nearer the market or its source of supplies than are its competitors, will be able, other things equal, to produce

and market its products at less expense than can competing localities. The same reasons, however, which led us to treat distance as a separate factor in rate making make it desirable to consider separately those cases in which natural advantages arise from differences in distance.

The natural advantage which a short distance point has over a long distance one is so obvious that the cases illustrating this point can be very briefly treated.

In the case of *The Anthony Salt Company et al. v. The Missouri Pacific Railway Company et al.*¹, one question at issue was whether salt from Michigan might be given a rate to points in Texas as low as that given to salt-producing regions in Kansas. It was discovered that the rate on Michigan salt as far as St. Louis was determined by conditions over which the defendants had no control. The Commissioners therefore treated the rate to St. Louis as merely "an element of the original cost" of preparing the Michigan salt for market and in judging as to the proper relation between rates on Kansas salt and Michigan salt made the comparison between rates to the Texas points from St. Louis and Hutchinson, Kansas, respectively.

St. Louis is 743 miles from Ft. Worth, Texas; Hutchinson is 427 miles from the same point. If the common rate 35½ cents per hundred is the proper rate for the 427 miles haul from Hutchinson to Ft. Worth, then the excess of haul from St. Louis to Ft. Worth, which is 316 miles, without any reason shown in the record, is a carriage without charge. While many other considerations than distance may be considered in determining what shall constitute a proper rate, yet in this case nothing is shown to justify the apparent discrepancy of charge, and it is believed to work an undue preference to Michigan salt over Kansas salt going to Texas and southerly points.

¹ 5 L. C. C. Rep. 299; 4 I. C. R. 33.

It can hardly be disputed that here is a disadvantage brought about to the Kansas, and a preference given to the Michigan salt, both undue and unreasonable. . . . We see nothing in the situation, as proven, which can be given as a valid reason for not putting the Kansas salt fields in possession of all these natural advantages in the territory traversed by these lines. We think that in all this territory where the Texas points are as near to Hutchinson as to St. Louis, the Kansas salt should, by a rearrangement of rates, be carried for an equal charge and where Hutchinson is nearer than St. Louis, the Kansas salt should have the reasonable advantage of its proximity to the market.

The danger that such a rearrangement of rates would give to Kansas salt producers monopolistic power, enabling them to raise the price of salt to Texas consumers, seems to have been forestalled by the Commission's discovery that the productive capacity of the Kansas salt fields was "practically unmeasured, and probably equal to any demand that is likely to exist for the product."

In the case of the *Colorado Fuel and Iron Company v. The Southern Pacific Company et al.*¹, complaint was made that a rate of \$1.60 per 100 pounds on certain iron and steel products shipped from Pueblo, Colorado, to San Francisco was unfair and unreasonable when compared to the rate of 60 cents or less per 100 pounds on the same iron and steel when shipped to San Francisco from Chicago and from Mississippi and Missouri river points. Many considerations, such as cost of service, competition by water, value of commodity, and social considerations, played a part in the discussion and affected more or less the decision of the Commissioners. On the whole, however, the discrimination was shown to be due primarily to a desire on the part of the carriers to equalize the natural disadvantages of location held by eastern producers of iron and steel with reference to the

¹ 6 I. C. C. Rep. 488.

western markets. This method of rate making did not, of course, commend itself to the Commissioners, who declared: "The off-setting of natural disadvantages at one place as compared to like business at another, by discrimination in freight charges, is inconsistent with the equality provisions of the statute." Pueblo had certain disadvantages for producing and shipping steel, — inferiority of coal and iron ore, high cost of labor, and high terminal charges; but these did not outweigh her natural advantages due to location. As a result, a large iron and steel industry had sprung up the financial success of which was in large measure dependent on its ability to retain its advantages over its competitors in the western markets. This natural advantage due to less distance the Commission concluded the Pueblo company had a right to retain. After allowing for the greater terminal expenses, when compared with the distance the commodities were hauled, it was decided that

the rates from Pueblo to San Francisco should not exceed 45 cents per 100 lbs. on steel rails and railway fastenings, or $37\frac{1}{2}$ cents per 100 lbs. on bar iron, cast iron water pipe, etc., nor should the rates from Pueblo to San Francisco on such traffic or on other iron and steel articles be greater at any time than 75 per cent of rates contemporaneously in force on like traffic from Chicago to San Francisco over any of the different roads.

The basing-point system of rate making generally followed in the southeastern section of the country affords numerous examples of discrimination against the shorter distance points. The Commission has justified these discriminations wherever active water competition has seemed to compel lower rates to the long distance points, and it has also been compelled by court decisions to uphold these discriminations wherever active rail competition has proved a potent factor. But the Commission has acted very un-

willingly in so deciding, and it has thrown upon the carriers the responsibility of showing that circumstances and conditions were so dissimilar as to warrant the lower charges to the long distance point.

In the *Cordele Machine Shop case*¹ the Commission decided that the fact that the more distant point was a greater producing and distributing center might be due to no natural advantages possessed by this place but merely to the fact that it was arbitrarily made a favorite by the carrier.

In the *Hampton, Florida, case*² the carriers had been charging rates to that city which were made up of the through rate to Palatka, a point beyond Hampton, plus the local rate back to Hampton. Water competition at Palatka was said to control the rate at that point but this the Commission did not find to be the case, and it declared that under the circumstances the basing-point system of rate making was unfair to surrounding localities because the effect of such a system

is to enable the basing-point merchants to compete with the local merchants at their own doors on equal terms, while the latter are debarred from such competition with the former, and as to territory intermediate between the basing points and surrounding localities merchants at the basing points are given such an advantage in rates as to enable them to undersell merchants at surrounding localities and drive them out of the jobbing business in such intermediate territory.

3. Group rates

No cases which have come before the Commission better illustrate the application of the principle that a place is entitled to the advantages of its geographical location but is not entitled to push this claim beyond

¹ *Cordele Machine Shop v. L. & N. R. R. Co. et al.*, 6 I. C. C. Rep. 361.

² *Board of Trade of Hampton, Fla. v. N. C. & St. L. R'y. Co.*, 8 I. C. C. Rep. 503.

the bounds set by cost of service, than do those cases which deal with group rates, that is, rates which are common to all points within a given area which are reached by the same lines, irrespective of their distance from the basing point. Such a system of rate making is exemplified in the zone tariffs of Austria and Hungary, where the principle of group rates may be said to have found its logical application.

In one of the earliest cases¹ of this sort heard by the Commission it was shown that the carriers were in the habit of making uniform rates on milk transported to New York from points on their lines which were situated at distances varying from 21 to 183 miles from the point of destination. The complainants urged that in this way undue preference was given to the more remote points, inasmuch as the amount of service rendered to these places was greater than that given to the points nearer the market altho the charge was made the same for all. The complainants were apparently seeking to make use of the value of service principle which the Commission had already declared to be the fundamental principle in rate making. Unfortunately for their cause, the complainants in their brief made the following admission with reference to the costs of conducting the business of transporting milk: —

It will be observed that the character of the service rendered is the same and every element which goes to make up the expense account of the railroad for performing this service is identically the same whether the milk is taken to its cars 183 miles from New York or 21 miles from New York, except in the length of the haul.

This admission the Commissioners took advantage of to bolster up their decision that the group rate

¹ *N. W. Howell et al. v. N. Y., L. E. & W. R. R. Co. et al.*, 2 I. C. C. Rep. 272; 2 I. C. R. 162.

was justifiable in this case, since the greater part of the expense of transporting milk by special trains was independent of distance.

The special equipment and trains, the extra labor and cars, the terminal services and supervision, are all employed upon the milk business as a unity . . . and it may well be doubted whether the length of the haul establishes in this case any very material difference between the expenses at the different localities.

The Commission's decision was accordingly made to rest on the basis of cost of service; and the case would have been treated under this heading were it not for the fact that in a later case the Commissioners shifted their ground and, altho they did not admit that there was any inconsistency, practically reversed their decision.

In the later case¹ much the same situation was revealed, but in this instance the blanket rate on milk and cream shipped by special milk trains applied to all places within 335 miles from New York by some of the defendant lines. The complainants were careful not to weaken their case as they did in the former instance by admitting that the cost of service was practically the same from the more distant points as from those near at hand. On the contrary, they declared that the rates

are purely arbitrary and are not at all grounded upon the distance of the terminal from the shipping points, nor based to any extent upon the value of the products carried or upon the cost of carriage to the defendants, or upon any special service rendered.

They also declared that the milk rates were higher than for other farm products whose character was the same and whose costs and risks of transportation were greater. Yet the real burden of their complaint,

¹ *Milk Producers' Protective Association v. D. L. & W. R. R. Co. et al.*, 7 I. C. C. Rep. 92.

tho it was not boldly stated, was that the blanket rate took from those shippers who lived near New York their geographic advantage of situation near a market.

The defendants in their answer laid stress on this argument, through an exaggeration of statement, when they alleged that the object of the petition was to create

a monopoly of the milk business in favor of a limited class of shippers by securing lower rates to them than are granted to more distant shippers, the practical effect of which will be to drive the latter out of business and thus enable the petitioner and those it represents to secure higher prices from the consumers.

The carriers presented a strong argument in support of the group rates on milk, which they contended were better for consumers as well as producers than were rates based on distance.

The Commissioners made an elaborate investigation of the facts concerning the distances of the various milk-shipping stations from New York and the amounts of milk shipped from each station, of the methods of packing milk and the cost of moving the milk traffic, of the amount of milk handled by each line and the rates charged on other farm produce. The result was that they decided against the continuance of the blanket rate on milk from all points within 335 miles, altho they still upheld the principle of group rates. In place of the one uniform rate from all points on the defendants' lines they suggested the following method of grouping: First group, all places within 40 miles of the terminal, with a uniform rate of 23 cents per can (40 quarts) of milk, and 41 cents per can of cream. Second group, all places from 40 to 100 miles from the terminal, with a common rate of 26 cents on milk and 44 cents on cream. Third

group, all places from 100 to 190 miles from the terminal, with a rate of 29 cents on milk and 47 cents on cream. Fourth group, all places beyond 190 miles from the terminal, with a rate of 32 cents on milk and 50 cents on cream.

This system of group rates, it will be noticed, is quite different from that upheld in the Howell case, where the distances covered by the blanket rate were practically the same as those included in the first three groups of the above classification. The Commissioners maintained that they were guided by the same principles as controlled their decision in the earlier case, and that the situation differed in this respect, "that the addition of new territory has operated to the prejudice of the old." The real difference between the two cases was that in the Howell case the evidence seemed to show that it was necessary for the carriers to collect milk from places as far distant as 183 miles from the terminal in order to secure a supply sufficient to satisfy at moderate prices the demand of consumers in New York City. As long as the milk traffic was confined to this territory all producers within the territory could market their product at prices which yielded a fair profit. When the carriers later extended the milk service and the uniform rate to all places within 335 miles from New York, the effect was to widen the source of supply to such an extent as to make it impossible for all producers within the enlarged territory to dispose of their product. Some of the near-by producers were therefore crowded out of the market by those at a distance. The Commissioners declared it to be the

duty of carriers to establish rates which will not deprive producers more favorably situated with reference to a dependence upon

that market of part of their trade in a limited traffic, or prevent their supplying their share of the greater demand due to the increase in the city's population or in the consumption per capita. Furnishing an extra perishable article like milk in no greater quantities than is required for daily use in a given city is a business which falls naturally to those producers nearest the city who are able to provide the needed supply.

That the Commissioners were of the opinion that a system of rate making which had respect for the rights of the near-by producers would be in accord with the cost of service principle emphasized in the Howell case is shown by their statement that, "Prudence would influence railroad managers to confine the collection of milk within the territory in which it can be most cheaply handled and to extend the milk system no further than the increase and growth of the demand should require."

We have already¹ given some consideration to the case of the *Commercial Club of Omaha v. Chicago and Northwestern Railway Company et al.*² and have seen that a majority of the Commission refused to sanction the demand of the complainants that since Omaha, Nebraska, and Council Bluffs, Iowa, had a group rate to points in Nebraska, they should also have a group rate to points in Iowa. A difference in the cost of service from the two places was given, it will be remembered, as one reason for refusing the demand of the complainants. Another argument which found a large place in the reasoning of two of the three Commissioners who constituted the majority was that jobbers of Council Bluffs were entitled to their natural advantages of location for carrying on the Iowa trade. Their argument was as follows:—

As respects the distributing trade in Iowa it cannot well be denied that Council Bluffs has some natural advantages of location. . . .

¹ See p. 282.

² 7 I. C. C. Rep. 396.

If Council Bluffs is more favorably situated with reference to the trade of western Iowa, the carriers are not to be condemned for recognizing that fact in adjusting their charges. It does not necessarily follow that rates should be the same from Omaha and Council Bluffs into Iowa because they are the same from those places into Nebraska. If Council Bluffs has an undue advantage in the matter of west-bound rates, the correction of any resulting injustice to Omaha must be sought in an appropriate proceeding.

This reasoning would meet with more ready acceptance by the student of railway rates had not previous decisions of the Commission already recognized the validity of group rates under circumstances and conditions which leave little room for doubt that its members would have held them applicable, as a general rule, to Omaha and Council Bluffs, had that question been directly before them. Indeed, the argument of the majority in this case shows that they recognized the validity, or perhaps the necessity, of group rates for Omaha and Council Bluffs to and from all parts of the country except to points in Iowa. To permit the continuance of a group rate from these cities to all places except Iowa points, and then to fall back upon "natural advantages of location" as a reason for refusing group rates to points in Iowa seems illogical and it brings up the question as to whether group rates are ever justifiable, — that is, whether they can be given without taking away from certain places their natural advantages of location.

The two dissenting Commissioners in the case did not object to the argument that Council Bluffs was entitled to its natural advantages of location. Their refusal to agree with the majority was due wholly to the fact that they held that the agreement entered into between the roads, "to establish and maintain absolute equality in in and out rates for these towns" did create a claim for the maintenance of this

agreement in respect to Iowa points if it were maintained for other points.

4. *Natural advantages due to competition*

Competition might be thought to create artificial advantages rather than natural ones and doubtless this is true in many instances. There are certain conditions, however, in which a place has an advantage over its competitors owing to the fact that it is so situated by nature as to enjoy the advantages of competing routes. Chicago, situated at the lower end of Lake Michigan, where the railway lines running from the east to the northwest must round the lake, is a notable example of a place naturally located to enjoy competition. In most of the cases involving competition the Commission has rested its decision squarely on the basis of this competition, without endeavoring to show that this was a natural advantage possessed by the competitive point. Accordingly most of these cases considered will be dealt with in a subsequent section of this paper. There are, however, a few cases in which the Commission has seen in a competitive situation a natural advantage which entitled the one town to lower rates than those granted to its rivals.

Two cases ¹ in which the city of Sioux Falls, South Dakota, was the real complainant will suffice to illustrate this point, since in the one case the Commissioners found that competition created a natural advantage for one city and in the second case no such natural advantage appeared.

In the first case complaint was made that rates from Chicago to Sioux Falls were unjust and un-

¹ *E. J. Daniels v. C. R. I. & P. R'y Co. et al.*; *E. J. Daniels v. Great Northern R'y Co.*, 6 I. C. C. Rep. 468.

reasonable as compared with the rates from Chicago to Sioux City, Iowa. The short line route from Chicago was slightly less to Sioux City than to Sioux Falls but both places were well served with railroads connecting them not only with Chicago but also with Duluth, Milwaukee, and other points on the Great Lakes. The Commissioners did not think that under the circumstances the slight difference in distance was a sufficient cause for a difference in the rates to the two cities. They said: —

Confining the issue to location alone and taking into account only the relation of the carriers to these two towns, we should have little hesitation in prescribing for Sioux Falls substantially the same rates from Chicago as are granted to Sioux City. But . . . other considerations incline us to a somewhat different conclusion.

These other considerations grew out of the fact that Sioux City is situated on the Missouri river while Sioux Falls is not. It had been for a long time the practice of the western railroads to make rates from the east somewhat more favorable to cities situated on the Missouri river than to other near-by points. This practice had its origin in the fact that at one time water competition by Missouri river boats had been a potent element in the determination of railway rates; and, altho this competition by water had almost ceased, the business interests of the Missouri river towns had appeared to be more or less dependent on the maintenance of the old rates and they had accordingly been continued.

The Commission, altho expressing its displeasure with the basing-point system of rate making which gave such a preference to the Missouri river towns, saw no way of correcting the evil without disturbing the entire rate situation in the west and creating commercial disturbances in the Missouri river cities

as well. The only practicable remedy was, therefore, to reduce rates to Sioux Falls. Yet, while they ordered some reduction in the rates to that place, the Commissioners were unwilling to add another to the list of Missouri river towns. The reason for allowing a difference in the rates to the two towns could hardly have been actual competition in the one case which did not exist in the case of the other, for as we have seen the two places seem to be equally favored in this respect; nor could it have been distance, for the Commission ignored the slight difference in the distances. Sioux City's advantage lay rather in the fact that it was a Missouri river town and thus shared in the favors granted by the carriers to those towns.

The peculiar advantage possessed by Sioux City in the above case will perhaps be better understood after a consideration of the second case brought by the Sioux Falls complainant. In this case complaint was made that rates from Duluth were higher to Sioux Falls than to Sioux City, which was 78 miles farther from Duluth. The Commissioners found in this case no reason for a difference in the rates to the two places. "The location of Sioux Falls, its distance from Duluth, and the conditions under which transportation is effected, seem to require as low rates to Sioux Falls as those accorded to Sioux City." In some respects this decision might be regarded inconsistent with the decision in the Chicago-Sioux Falls case; since the later decision would seem to require that rates from Chicago to Sioux Falls be reduced in order to meet the reduction in the Duluth-Sioux Falls route. It did not appear from the Commission's investigations, however, that the Duluth route was an active competitor with the Chicago route for Sioux Falls traffic.

Attention must once more be called to the fact that the natural advantages recognized in this series of cases are always due to differences in cost of production or transportation. The natural advantage possessed by a place may be due to lower costs of production as in the Eau Claire case, or to lower costs of transportation as in the Boston Chamber of Commerce case, or to a combination of these two as in the Michigan salt case. The natural advantage may be due to a shorter distance covered in transportation, in which case lower costs are reflected. Group rates which would tend to annul differences in distance or costs of transportation are justifiable only when these differences are slight and when the group rates do not deprive any of the more favorably located producers of a market for their products; for they have the first claim on that market. Natural advantages which are ascribed to competition are the hardest to explain on the grounds of differences in cost; but in the one case cited it may be said that the preference given to Sioux City was originally due to the fact that she had the advantage of a cheap water route to market, and that even after this water route had been abandoned it continued to furnish potential competition which had been given recognition in the system of rate making.

VI. COMPETITION

The act to regulate commerce was passed by a Congress which was strongly of the belief that competition between railroads was salutary in its workings and was to be fostered. The purpose of regulation was not to thwart competition but to check monopoly. The framers of the act and those who voted for it

may not have rightly understood the nature of railway competition and its effect in producing discriminations, but there can be no doubt that they intended that the act should promote competition between carriers and between places, and that they placed reliance on competition as a rate-making force beneficent in its results.

The members of the Interstate Commerce Commission appointed to carry out the provisions of the act were fully aware of the intention of Congress in this matter, and in good faith undertook to apply the competitive principle to railway rates.¹ This is not the place to enter into a discussion of the ways in which the Interstate Commerce Commission gradually modified its views as to the beneficial effects of competition between railroads and came to the conclusion that competition between carriers could be made an excuse for discrimination between places only in those cases where the lower rates were forced by the competition of carriers not subject to the act to regulate commerce. Nor do we need to explain at length the way in which this tendency of the Commission was thwarted by the decisions of the Federal courts² to the effect that competition between the carriers subject to the act might create such dissimilar circumstances and conditions as to warrant their being taken into account by the Commission "as having due regard to the interests of the public and of the carriers."

It is important to note, however, that the difference of opinion between the Commission and the courts concerning the extent to which, under the act, competition might be allowed to influence rates, makes

¹ See the First Annual Report of the Commission, p. 40.

² Social Circle Case; 162 U. S. 184. Troy case; 168 U. S. 144.

it uncertain how far the real opinion of the Commissioners is reflected in some of the cases to be considered under the heading of competition. Since the purpose of the present inquiry is to show how a consideration of the economic and social conditions affecting rate making has led the Interstate Commerce Commission to develop certain fundamental principles controlling railway rates, we are less interested in those cases in which the decisions of the Commission have resulted simply from obedience to the orders of the courts. But in many of the cases which have come before it the Commission has of its own volition decided that competition was the controlling factor in the determination of the rates in question. These cases may be classified as follows: (1) Those in which the controlling competition is between carriers subject to and those not subject to the act to regulate commerce. (2) Those cases in which the competition is between carriers subject to the act. (3) Where the competition is between places or between different sections of the country. (4) Export rate cases. (5) Where competition between shippers or between producers is the controlling factor. (6) Where competition is necessary to prevent the growth of monopoly.

1. *Competition between carriers subject to and those not subject to the act*

The act to regulate commerce did not include within its scope carriers engaged in the transportation of passengers and goods entirely by water. And for obvious reasons it could not include those carriers, whether by rail or by water, which were wholly subject to a different political jurisdiction but which nevertheless might at times actively compete with American

railroads for certain kinds of traffic. It was clear that unless the carriers made subject to the act were to be deprived of their fair share of this highly competitive traffic they must be allowed to meet the low rates set by carriers not subject to the act; even if this involved the granting of lower rates on the competitive traffic than were accorded to traffic not competitive. Brief mention will suffice of the cases in which the Commission has upheld rate discriminations which were clearly shown to have resulted from the competition of carriers not subject to the act. The only cases in which the Commission has refused to recognize such competition as a legitimate force controlling rates is where the carrier subject to the act was shown to be the active and not the passive factor, that is, where it was shown to have forced the low rates on its competitors, instead of having had the low rates forced upon it. The Commissioners have also insisted that where a carrier has accepted a low rate on a portion of its traffic because this low rate was forced upon it by competition, the low competitive rate must be high enough to cover the additional costs of handling this traffic. Otherwise it would be necessary to increase the rates on the non-competitive traffic to make up for the loss occasioned by the addition of the competitive traffic.

In the case of *Lehmann, Higginson & Co. v. The Southern Pacific Company et al.*¹, the Commission decided that a rate of 85 cents per 100 pounds on sugar carried from San Francisco to Humboldt, Kansas, was not unlawful, altho only 65 cents were charged for like shipments to Kansas City, Kansas, which was 100 miles farther from San Francisco than was

¹ 4 I. C. C. Rep. 1.

Humboldt. "Actual water competition of controlling force" was shown to have determined the low rate to Kansas City and at the same time it was shown that this low rate afforded to the carrier some revenue above the cost of moving the traffic. The rate to Humboldt on the other hand was shown to be not unreasonable and to be even lower than it would have been except for the influence of the competitive conditions at Kansas City.

For the same reasons the Commissioners upheld¹ the practice of the railroads in granting lower rates to the Standard Oil Company on petroleum shipments to certain points in California from the oil fields in Pennsylvania and Ohio than were granted to the Standard's competitors located at intermediate points on the railroads. Competition of part-rail and part-water lines and of part-pipe and part-water lines existed in case of the Standard's product which did not exist in case of its competitors.

Water competition of "controlling force" was held to justify² carriers in charging less on traffic sent from New York City to Memphis, Tennessee, than to Chattanooga in the same state. Lower rates to Nashville than to Chattanooga were not upheld because the Commission did not believe that water competition at Nashville was sufficient to compel the low rates to that point. The United States Supreme Court refused³ to enforce the order of the Commission with reference to the Nashville rate and on a rehearing⁴ of the case the Commission

¹ *George Rice v. A. T. & S. F. R. R. Co. et al.*, 4 I. C. C. Rep. 228.

² *Board of Trade of Chattanooga v. East Tenn., Va. & Ga. R'y Co. et al.*, 5 I. C. C. Rep. 546.

³ 181 U. S. 29.

⁴ *Chamber of Commerce of Chattanooga v. Southern R'y Co. et al.*, 10 I. C. C. Rep. 111.

decided that "the traffic from New York and other eastern points is carried to Nashville and Chattanooga under substantially different circumstances and conditions"; hence the higher rate to Chattanooga was not unlawful.

In the case of *W. S. King & Co. v. The New York, New Haven, and Hartford Railroad Company et al.*¹, complaint was made that a through rate of nine cents per 100 pounds was given on flour sent from New York to Boston, but to Readville, Massachusetts, eight miles nearer to New York the rate was 18 cents, the sum of the combined local rates to that point. The Commissioners upheld the discrimination against Readville on the following grounds: (1) The low rate to Boston was forced by water competition and was under the circumstances allowable. (2) There was no evidence that the local rates to Readville were in themselves unreasonable. (3) The traffic secured by doing the Boston business at the low rates and which could otherwise not be secured enabled the carriers to "make the local rates considerably lower than they would otherwise be."

With reference to this latter point it may be said that it is difficult to see how the local rates could be made less by means of the revenue derived from the through business, if, as the carriers claimed, the rates to Boston were "but little in excess of the actual cost of doing the work."

The Canadian Pacific Railway, not being subject to the act to regulate commerce, has always been a disturbing factor in the rate situation, particularly in the transcontinental freight and passenger business. The Interstate Commerce Commission when brought

¹ 4 I. C. C. 251; 3 I. C. R. 272.

face to face with the situation created by the competition of this foreign route has declared: ¹—

The competing American lines must either meet the reduced rates of such foreign carrier or lose their share of the traffic, and they cannot make such reduced rates apply at intermediate points without suffering large loss of necessary revenue.

The Commission has under such circumstances generally relieved the American carriers from the operation of the long and short haul clause of the act in order to enable them to meet the competition for through traffic.

These are only a few of the cases in which competition by carriers not subject to the act to regulate commerce has been held by the Commission to justify carriers subject to the act in lowering their rates at competitive points. Viewed purely as an economic and social proposition, it is at least debatable whether one carrier should be allowed to take traffic from another which can carry it at less expense, but in view of the fact that not all carriers were made subject to government rate regulation, and since it was clearly the intention of the framers of the act to promote competition wherever competition was possible, it is evident that the Commission has pursued the only way open to it in permitting these competitive rates.

2. Competition between carriers subject to the act

That competition between carriers subject to the act to regulate commerce could create such dissimilar circumstances and conditions that carriers might feel themselves justified in making it an excuse for departing from the rule laid down by the long and

¹ In the matter of the application of the A. T. & S. F. Ry et al. for a suspension of the fourth section. 7 I. C. C. Rep. 593.

short haul section of the act, was quite foreign to the minds of the Commissioners during the early years of their service. As explained in the Commission's Seventh Annual Report,¹ the Commission had held, prior to the decisions of the Federal courts placing a different interpretation upon the language of the fourth section of the act, that "the only railroad competition which may justify carriers in fixing rates contrary to the long and short haul principle was in 'rare and peculiar cases'."

The decision of the United States Supreme Court in the Troy case (168 U. S. 144) compelled the Commission to admit that competition between carriers subject to the act was a factor which must be taken into consideration in determining the reasonableness of a given rate. Many of the later cases coming before the Commission are decided, therefore, on the principle that the rates in question are made necessary by the competition of other roads. As already stated, these cases are of less value to us in our search for economic principles than those in which the decision was not forced upon the Commission, and for that reason we shall give them scant attention. We must not, however, fail to note those "rare and peculiar cases," in which the Commission, on its own initiative, has decided that competition between carriers subject to the act is a controlling factor in the determination of a rate.

In the first case² of this sort to be considered, application was made by a carrier to be relieved from the operation of the long and short haul clause during the progress of the Columbian Exposition in Chicago in 1893. This carrier had in connection with other

¹ P. 33.

² Petition of C. H. & D. R. R. Co., 6 I. C. C. Rep. 323.

carriers established a through passenger service to Chicago from Lima, Dayton, and other points in Ohio. The distance from these places to Chicago by the combination route was much greater than the distance by direct and competing lines. The petitioner therefore desired to be allowed to meet the rates of its competitors to Chicago without reducing the rates from intermediate and non-competitive points. The Commission granted the petition, and in so doing said:—

In the case under consideration it is shown that additional transportation facilities and accommodations for passengers travelling from Lima through Dayton to Chicago and return, during the World's Fair Exposition, are necessary to the convenience and safety of travellers to and from the Exposition. The petitioner has made provision for such increased facilities by establishing a new route which can only be utilized by the acceptance of the lower rate from Lima, \$9, which has been established by a competing carrier having a more direct route. . . . It also appears that this lower rate will yield to the petitioner something more than the cost of the service.

Other cases of the same sort have frequently arisen where a carrier having a long and circuitous route has desired to enter into competition with a carrier having a more direct route but has felt unable to make the rates at intermediate points as low as at the competitive points. When application has been made to the Commission for relief from the fourth section, the petition has usually been granted,¹ provided the petitioners were able to show: (1) that the circuitous route had not forced the low rate but that it was forced upon it; (2) that the low rate at competitive points would yield to the carrier some net revenue, that is, something more than the costs of handling the traffic; (3) that the rates at the in-

¹ See for illustration petitions of C. & E. I. R. R. Co., and of D. L. & W. R'y Co. Commission's Eleventh Annual Report, pp. 102-103.

intermediate points were not unreasonable, and that they would not be raised; (4) that business interests along the line would be promoted by allowing such competition.

Since November, 1897, when the Supreme Court in the Troy case decided that competition between carriers subject to the act might create such dissimilar circumstances and conditions as to warrant a greater charge for a short than for a long haul, there have been many cases in which the Commission has given competition between railroads as a reason for upholding certain rates brought in question before it. In some of these cases it is evident that the Commission is merely following the precedents established by the courts. In other cases it is not so clear that the Commission is not expressing the opinions of its own members in regard to the influence which competition between railroads may properly exercise on rates. The Commissioners at times have adopted a line of reasoning which seems to show that even without the guidance of the courts they would have given much weight to railway competition as an influence tending to establish fair and reasonable rates. One or two references to some of the later decisions will make this point clear.

In the case of the *Mayor and City Council of Wichita v. The Atchinson, Topeka & Santa Fe Railway Co. et al.*¹, complaint was made that the city of Wichita, Kansas, was being unjustly discriminated against because on grain intended for export the rates to Galveston, Texas, from Wichita were higher than from Kansas City, Missouri, which was a more distant point. It was also claimed that the Wichita rate was in itself unreasonable.

¹ 9 L. C. C. Rep. 534.

The Commission discovered that conditions at Kansas City made the rates from that point highly competitive, since grain intended for export was sent by several routes, to Atlantic as well as to Gulf ports, and these rates had long been the resultant of this active competition. They were, therefore, beyond the control of the defendant carriers. Under the circumstances the rates from Kansas City to Galveston were all that the tariff would bear, while the Wichita rates were not subject to such highly competitive conditions. The Commissioners believed, however, that the discrimination against Wichita was too great and that rates from there to Galveston were excessive to the extent of two cents per 100 pounds. In rendering their decision to this effect the Commissioners paid some attention to cost of service and to other considerations, but in the main their opinion was based on the fact that competition had tended in the long run to establish a rate of $28\frac{1}{2}$ cents per 100 pounds from Wichita to Galveston and this rate must therefore be regarded as a reasonable one. Their argument was as follows: —

One test of a reasonable rate is to inquire what has been the result of competition between different carriers; when several different lines of railway could, and did bid for the same traffic, at what price have these carriers transported that traffic? Where such competitive conditions, operating through several years, have settled down into a certain rate, we think that fact is of great weight. Now in the case before us competition, after being subjected to all the restrictions then possible, resulted in an actual rate from Wichita not exceeding $28\frac{1}{2}$ cents on the average. While not conclusive, this is certainly important in attempting to determine what is a reasonable charge.

This statement, which seems to place implicit confidence in competition as a force tending to establish reasonable rates, is not the only one which might

be cited in support of this point of view. Generally speaking, whenever the Commission has upheld "a long existing rate" (and such cases are frequent), the decision has apparently rested on this view concerning the permanent results of competition.

Another application of the doctrine that differences in rates may sometimes be justified by differences in competitive conditions is found in the case of *Weil Brothers & Company v. Pennsylvania Railroad Company et al.*¹ The question raised was whether it was lawful and just to charge 62 cents per 100 pounds for transporting "wool in the grease" from Philadelphia to Fort Wayne, Indiana, when at the same time a rate of 43 cents per 100 pounds was given on the same commodity transported in the other direction. The Commission upheld the difference in rates on the following grounds: —

A great and increasing volume of freight is a factor of much influence towards the depression of rates. The great volume of freight from the west produces a competition to secure the traffic which, with the facilities provided for its handling, serves to secure . . . a rate to the seaboard which may not be taken as a fair measure of rates on the same commodities in chance shipments in the opposite direction.

Altho it does not fall within the class now under discussion it is interesting to note here that another case² was decided by the Commission within three weeks of the time when the case just quoted was settled, in which the decision rested on precisely the opposite grounds. The question involved the right of carriers to charge higher rates on screen doors shipped from Fenton, Michigan (near Detroit), to Winsooki, Vermont, than were charged from Winsooki

¹ 11 I. C. C. Rep. 627.

² The A. J. Phillips Company v. G. T. W. R'y Co. et al., 11 I. C. C. Rep. 650.

to Detroit. The Commission gave the following reason for allowing the discrimination to continue: —

To a considerable extent the bulky products of the west require for their transportation equipment in excess of that necessary to the carriage of west-bound freight, so that there is a greater movement of empty cars under lighter power westward, which increases the expense of transportation to the carriers. . . . Some disparity, therefore, between the rates on east-bound and west-bound traffic seems to be justified by the conditions resulting from the empty car movement in one direction.

Here it is evident that cost of service is the controlling principle. The Commission seems unaware of the inconsistency between these two decisions.

3. *Competition between places or sections*

Competition between places or sections is frequently more intense than that between carriers and is, indeed, not seldom the cause of the latter. The desire to preserve competition between places has, however, at times been used by the Commission as an argument for restricting within certain limits the competition between carriers. Most of the cases in which this attitude has been taken have arisen since the decision of the Supreme Court in the Troy case and doubtless the Commission's decisions have been considerably affected by the ruling of the Court.

A case which affords a good illustration of this sort of competition is that of *The Wilmington Tariff Association of Wilmington, North Carolina, v. the Cincinnati, Portsmouth, and Virginia Railroad Company et al.*¹ The city of Wilmington had long served as a distributing center to many interior towns of North and South Carolina not only for goods imported by water, but likewise for goods brought from the west. Through a readjustment of freight rates

¹ 9 I. C. C. Rep. 118.

made by the eastern trunk lines, Wilmington's chief competitors, Norfolk and Richmond, Virginia, were given rates from the west much lower than had hitherto prevailed, — rates which were substantially the same as were given to Baltimore, Maryland. Water competition at all these points was made the excuse for the lower rates. Water competition of the same sort existed at Wilmington, but it obtained no recognition from the railroads and the higher rates by rail to that port remained in force. As a result of this change in rates Wilmington steadily lost ground as a distributing center and was being gradually supplanted in this trade by Norfolk and Richmond. This was especially true in the case of such traffic as originated at St. Louis or Chicago or at points west of those cities. So far as the traffic originating at Ohio river points, like Cincinnati and Louisville, was concerned, the relation of rates to Wilmington and Norfolk seemed to the Commission to be fair and reasonable. For traffic originating at points beyond the Ohio river and billed to Wilmington, the carriers were found to be charging the full local rates to the Ohio river cities plus the through rates from Cincinnati or Louisville to Wilmington. In case the traffic was billed to Norfolk or Richmond the western roads accepted as their share of the through rate from Chicago or St. Louis less than the local rates to Ohio river points, so that this made the total through rate less for Norfolk and Richmond than for Wilmington.

The Commissioners believed that the readjustment of rates had unjustly discriminated against Wilmington. In their decision, they said: —

After giving the case most careful study, and keeping in view the rights and just interests of all concerned, we see no escape

from the conclusion that the present adjustment of rates which operates largely to deprive Wilmington as a competing point for wholesale distribution of the benefits of such great primary markets as Chicago and St. Louis and limits her to such intermediate points of supply as Cincinnati and Louisville (from which the related rates appear to be fair and reasonable), subjects Wilmington to prejudice and disadvantages which are in substantial degree undue and unreasonable; that the carriers operating the defendant through lines are to that extent responsible and that the regulation provided for in the Statute should be applied to remove and prevent these wrongs.

Competition between carriers was claimed¹ by the Southern Railway as an excuse for granting lower rates to and from Lynchburg, Virginia, than were accorded to Danville in the same state, the two towns being rival distributing centers. The argument of the defendant may be analyzed as follows: (1) Competition of the trunk lines leading to the Atlantic seaboard has resulted in the establishment of a very low rate to Baltimore. (2) The Chesapeake and Ohio Railway, in order to develop an export business for its own line at Norfolk, has given the same rates to Norfolk as were given to Baltimore. (3) Lynchburg, being an intermediate point on the Chesapeake and Ohio and on the Norfolk and Western Railway, has been given the same rates as were given to Norfolk, in order that the long and short haul clause of the act to regulate commerce may be observed. (4) In order to share in the Lynchburg traffic the Southern Railway is obliged to meet the low rates established by the other roads. (5) Danville does not possess the same competitive situation as Lynchburg and therefore the Southern Railway did not reduce rates to Danville at the time it entered into competition with other roads for the Lynchburg traffic. Nor is it bound to do so, since the United States Supreme

¹ *City of Danville et al. v. Southern R'y et al.*, 8 L. C. C. Rep. 409.

Court has held in the Troy case that competition between carriers may create such dissimilar circumstances and conditions as to warrant them in making lower rates to the long distance competitive points than to the short distance non-competitive ones.

To this argument the Commission replied as follows: (1) The low rates to Norfolk are not due wholly to the competition at Baltimore but "the two rates have mutually interacted. The Norfolk rate may have operated to reduce the Baltimore rate quite as frequently as the reverse." (2) The Chesapeake and Ohio Railway is not alone responsible for the low rates to Lynchburg and Norfolk and these low rates have not been forced on the Southern Railway. On the contrary, the low rates to these cities are the result of active competition in which the Southern Railway has shared. "It cannot be found as a fact that the Southern Railway has simply accepted the rates named by its competitors." (3) Competition by rail formerly existed at Danville and has been ended only by a consolidation of the competing lines under the Southern Railway.

In announcing its decision to the effect that rates to Danville were too high, the Commissioners declared that the Southern Railway in establishing rates much higher to Danville than to Lynchburg had consulted only its own interests, not those of the public. In offering as an excuse for this discrimination the existence of railway competition it did not consider at all the nature of the competition between the cities of Lynchburg and Danville, but it had on the contrary by means of a consolidation of competing lines destroyed "the competitive advantages which the enterprise of [Danville's] citizens in one way or another had secured." The Commission continued: —

Danville is situated 66 miles south of Lynchburg. It is in competition with Lynchburg. Now these carriers have no right to put in effect a system of rates which prohibits the city of Danville from transacting business in competition with the city of Lynchburg. . . . Rates to Danville must be adjusted with relation to competitive localities like Lynchburg.

The Commission therefore recommended a reduction of rates to Danville. It did not, however, recommend that the rates be made as low as those to Lynchburg. While fully convinced that the location of Danville and the competition of carriers which had formerly existed at that point required that rates to that city be reduced, the Commissioners were sufficiently impressed with the showing made by the railroads as to the more active competition at Lynchburg to cause them to hesitate to recommend that equal rates be given to the two cities.

Pursuing a similar line of argument to that employed in the Wilmington and Danville cases, the Commission, in what is known as the *St. Cloud case*,¹ refused to admit the right of a carrier having a long and circuitous route from Duluth to St. Paul, Minnesota, to enter into competition for traffic between these two points unless the carrier was prepared to make the rates as low to intermediate points. The defendant claimed that it was merely meeting the existing rates at St. Paul established by its competitors, but the Commission replied that the moment it entered into competition for traffic between Duluth and St. Paul "it became a factor in the determination of that rate." The long route would not be satisfied with the small amount of traffic which would go to it if it merely met rates established by shorter lines but would seek to attract additional traffic by lowering

¹ *George Tileston Milling Co. v. Nor. Pacific R'y Co.*, 8 L. C. C. Rep. 346.

its rates and would thus discriminate still further against the intermediate points.

The defendant also declared that the existing rate at St. Cloud, the intermediate point, was "reasonable in and of itself," but the Commission replied:—

A rate can seldom be considered in and of itself. It must be taken almost invariably in relation to and in connection with other rates. The freight rates of this country both upon different commodities and between different localities are largely interdependent, and it is the fact that they do not bear a proper relation to one another, rather than the fact that they are absolutely either too low or too high, which most often gives occasion for complaint and which is the ground for complaint here.

If we look at this case not from the legal standpoint but from that of the broader economic and social interests involved, the most obvious objection which can be made to permitting the long and circuitous route to share in the flour traffic between St. Paul and Duluth is that this would be an unnatural and needlessly expensive method of transportation. Altho the Commission did not make this the basis of its decision it did refer to the matter in these words: "Wasteful competition by circuitous routes is to the disadvantage of railways as a whole, for ultimately there must be some relation between rates and the actual cost of transportation."

In the case of *F. J. Hoerr v. Chicago, Milwaukee, and St. Paul Railway Company*,¹ the Commission held that competition between markets and between producers may compel low rates at competitive points in which near-by non-competitive points may share, altho they are not entitled to rates as low as those given to the competitive points. In this case, the complainant, located at Mankato, Minnesota, claimed that on potatoes shipped to eastern cities he was

¹ 11 I. C. C. Rep. 547.

entitled to rates as low as were given to shippers at St. Paul, 100 miles further distant, where a through rate was in force. The defendant carrier, on the other hand, insisted that the St. Paul rate was due to competitive conditions which did not exist at Mankato and that the absence of this competition at Mankato "absolves it from its obligations to maintain the relation in rates between St. Paul and Mankato which ordinarily obtains." The Commission did not accept either argument in full. It declared that

if Minnesota-grown potatoes are to compete with others upon the Atlantic coast, a distance of about 1300 miles . . . and compete at the end of the haul with a similar commodity produced much nearer the point of consumption, [they] must of necessity be given a rate of transportation which is lower than the ordinary class rate established for much shorter distances. . . . If potatoes marketed at St. Paul cannot compete in the east without a low rate, the same thing is true of potatoes when marketed at Mankato.

In order to do "substantial justice" to the complainant, however, the Commission decided that it was not necessary to make the rate from Mankato as low as that from St. Paul since

there were competitive conditions at St. Paul which did not obtain at Mankato. . . . These rates are the outgrowth of a variety of competitive conditions, of market competition, of competition upon the Atlantic seaboard, and of competition at St. Paul. Some of these competitive forces act equally in case of both St. Paul and Mankato. Some apply mostly to St. Paul. In some the defendant is an important factor, and in some it is not concerned.

The Commission accordingly decided that a rate at Mankato 4 cents per 100 pounds higher than at St. Paul would work substantial justice to all parties concerned.

The competition which has thus far been considered and which has been held by the Commission to be of "controlling force" in determining rates has been either that between carriers or that between places.

In some instances the competition between carriers has been opposed to that between places and the Commission has been obliged to decide which form of competition should be allowed to continue. A form of competition far more intense and more difficult to regulate is that which results when an alliance is formed between a place or a section of the country and the carriers serving that place or section, and these allied forces then enter into a contest for traffic with other cities and other carriers which also have united forces. The best illustration of this intensified competition is that which has for years existed between the Atlantic port cities and the carriers leading thereto for the export traffic of the country. The development of the export rate controversy before the Commission and the latter's efforts to find a solution for it will be discussed in the concluding article of the series.

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SOME ASPECTS OF THE WOOL TRADE OF THE UNITED STATES

SUMMARY

Wool dealing as an intermediary between wool growing and wool manufacturing, 338. — Private sales the basis of the American system, 339. — The American wool trade at the present time. Extent of the traffic, 341. — Organization of the business in the East, the South, the West, on the Pacific Coast, 342. — Attempts to change the existing methods by complete reorganization. New York Wool Exchange, 349. — Partial reorganization, by local warehouses, 352. — And terminal warehouses, e. g. Chicago Wool Warehouse and Storage Company, 353. — Betterment of facilities without change in the existing system, 355. — The Boston Warehouse, 355. — Plan for a conditioning house, 356.

Among the many problems encountered in attempting to analyze the industrial development in the United States, one has proved especially difficult of satisfactory solution: What types of "commercial mechanism" (for want of a better term) stand between the producer of raw materials and the consuming manufacturer? In other words: How are the raw materials actually bought and sold?

There is a surprising dearth of material for an adequate study of this problem. And yet the problem appears to have significance, not only in the field of scientific investigation, but also in studies of efficiency and of cost analysis made from the business man's standpoint. Among the many instances of this lack of material, none is more interesting than that which concerns the mechanism of dealings between wool growers and wool manufacturers. There are excellent studies of these industries from various

points of view, but the industry which lies between them — wool dealing — has had no correspondingly adequate treatment.

It is not the purpose of this paper to offer an exhaustive study of the American wool trade, but only to sketch some of its main features, outline some of the attempts which have been made to modify it, and suggest some of the reasons why many of these have yielded no more lasting results.

The volume of wool consumed in the United States is now over five times as great as it was in 1860.¹ During that time American wool growing has been radically changed both in methods, location, and in the character of the output,² and wool manufacturing industries have been completely reorganized.³ But the commercial link between these two — wool dealing — has remained practically unchanged. The dealers are of the same type, and the buying and selling methods remain very much as they were a half century ago. This lack of change has been advanced repeatedly as an evidence of the inherent efficiency of the system. But at the same time it is said that the wool-handling methods in this country are cumbersome, unscientific, and needlessly circuitous and expensive. Unquestionably there are defects, but equally unquestionably the system is, in the main, an effective intermediary between the grower and the manufacturer, and any attempt to overturn the existing methods of the trade must at least offer some other method equally well adapted to American conditions. Relief from such ills as may exist is not to be looked for by modelling our system precisely on that employed elsewhere.

¹ Statistical Abstract of the United States, 1906, p. 560.

² C. W. Wright, *Wool Growing and the Tariff*, chs. vii and viii.

³ Special Reports of the Census, 1905, Part III, p. 87, Table I.

In England nearly all the imported wools are sold at public auctions. Most of the native wools from the south of England take advantage of the same system. In the north, private sale and fairs with competitive bidding are more extensively employed.¹ The wide use of the auction system in England as well as in Australia has its basis in the legal restrictions on the sale of wool used as collateral for loans, as well as in other peculiar local conditions not to be found in the United States.

In Australia, again, since the large percentage of the wool clip used as security for loans forces these wools to pass through a competitive auction sale, there results the necessity of uniform grading, which is best accomplished by the employment of a regulated grading warehouse system. The New Zealand, Cape of Good Hope, and German markets present generally similar conditions and move most of their wools through auction sales. But in practically all of the rest of the world where wool is important in commerce, — in the United States, Uruguay and the Argentine, and Russia, — private sale is the prevailing method.² It is significant that wherever the auction system has been introduced in this country it has succeeded only when an adjunct to the accepted system, not when a substitute for it.

To understand clearly the problems presented by our system of wool dealing, it may be well to recall some of the salient points concerning the commercial movement of wool in the United States, the functions of the wool merchant as they have developed here, and the characteristic features of our wool-buying

¹ J. H. Clapham, *The Woolen and Worsted Industries*, pp. 91-108.

² *Ibid.*, ch. III.

industries. We can then examine more satisfactorily some of the attempts to change the system.

The average annual consumption of wool in the United States, if we include carpet wools, is now about 500 million pounds. In normal years about three-fifths of this is of domestic production and the remaining two-fifths imported, altho these proportions, of course, show wide variation from year to year.¹ The wool product of the United States in 1909 was nearly 330 million pounds (including 41 million pounds of pulled wool) in the grease, or about 142 million pounds scoured and made fit for spinning; with a value of nearly 90 million dollars.² The imports of wool of all classes during the fiscal year 1908-09 (corresponding for statistical purposes with the crop year) were 266 million pounds in the grease — the imported share being above the average for recent years. These imports had a combined value of 49 million dollars.³ Altogether, then, we have in our total wool supply a raw material worth in an average year 140 million dollars.

Of our imported wools a little over one-half are coarse carpet wools, which constitute what is virtually a separate commodity. If we consider clothing and combing wools alone, we find that the annual consumption is about 400 million pounds, of which about one-fourth are imported. Our domestic clip is nearly all wool of the clothing and combing types, and constitutes the remaining three-fourths, — about 300 million pounds.

¹ Statistical Abstract of the United States, 1909, p. 590.

² Bulletin, National Association of Wool Manufacturers, December, 1909, p. 594.

³ Bureau of Statistics, Department of Commerce and Labor. Report on Commerce and Navigation, 1909, pp. 352-353.

Tho the United States is the third largest wool-producing country in the world, its trade in domestic wools is almost entirely intramural. No appreciable quantity of our domestic wools is exported. This eliminates from our wool-handling system a form of buying dominant in the colonial wool markets, and very important even in the British. Thus we have one very marked difference between our wool-handling business and that of other countries,—whether the great wool-growing countries or colonies which export their product, or England, which is quite as much a wool assembler and distributor in the world's trade as a buyer for manufacture. British exports of wool in normal years will amount to about one-third of the importations. Buying for re-export to dealers is clearly a much simpler commercial operation than buying for separation into closely graded lots to be sold to mills for specialized manufacture.

Furthermore, our American-grown supply is very promiscuous and uneven in its character, calling for much greater risk and demanding much more detailed knowledge in handling profitably; and this variety is increased by the fact that the domestic supply is inadequate in quantity for our own consumption and is supplemented each year by large quantities of imported wools. This diversity offers a contrast with even British conditions, and makes our wool-handling problem one calling for special developments in the buying side of the business. Wool buyers form the conspicuous part of the working force of the American wool-handling system, and it is their work which constitutes the chief draft on the wool merchant's expense account.

The selling side of the business, on the other hand, has been influenced largely by the high degree of

geographic concentration of the wool-manufacturing industries in New England and the Philadelphia section. Massachusetts and Pennsylvania produced over one-half of the United States output of woollen manufactures in 1905.¹ This, more than any other one factor, seems to explain the present localization of wool dealing in Boston and Philadelphia. In selling, the organization of the business is simple as compared with that in buying. Tho the sale of wool determines the dealer's ability to make his business profitable, it involves no problems or methods analogous to those in its purchase. Most of the dealers are constantly in touch with the wants of their own clients or of other large buyers, and wool selling is largely a matter of promptness to take advantage of indicated conditions, personal touch with buyers, and a considerable element of luck. Such, in brief, are the two ends of the wool merchant's equipment.

The work of gathering and disposing of American-grown wools varies materially in the different producing regions. The "fleece" wools of the states east of the Mississippi make a little over one-third of the annual clip. They are largely (about 70 per cent) of what is known in the trade as "medium" grade. The percentage of "fine" is largest in West Virginia, Pennsylvania, and Ohio,² but speaking generally, the eastern type of wool comes from cross-bred sheep raised quite as much for mutton as for wool. Wool growing in the East is an incident of general farming, and the flocks are relatively small, seldom over one thousand sheep and much more frequently under

¹ Special Reports, Census, 1905, Part III, p. 87, Table 2.

² Bulletin, National Association of Wool Manufacturers, Dec. 1909, Table 1, opposite p. 524.

five hundred. It is a characteristic feature of this part of the supply, therefore, that these wools come upon the market in small lots. The wools from each state, again, are designated in the trade both by state and grade, as Ohio XX, Ohio quarter-blood, Wisconsin quarter-blood, etc. The wools of the same grade from different states will differ in value, character, and shrinkage — Ohio wools of one grade, for example, being worth, say, three cents a pound more “in the grease” than the same grades from Wisconsin. The average amount of “shrink” (or the loss of weight in scouring) is the main element accounting for these fixed differences in price, but they are due in part to variations in breeding types, weather conditions, and other causes.¹

Formerly most of the wools from this part of the country were of a much purer Merino stock, but the growing importance of the mutton trade has changed the character of the clip from “fine” or fairly full-blood Merino wools, suitable for carding, to its present high percentage of cross-bred wools of “medium” grade or lower, adapted to combing for the manufacture of worsteds.² It may be observed in this connection that the trade terms “fine,” “medium,” “low medium,” etc., do not refer to the degree of salability of the wools. They are merely an indication of their general character. The “medium” and “low medium” wools are the longer, coarser, and stronger wools of the cross-bred sheep, and these very properties give them value for worsted spinning. When the demands of fashion are strong for worsted goods and light for woolen goods the prices of the

¹ Interviews with Philadelphia and Boston wool merchants.

² Wright, *Wool Growing and the Tariff*, ch. vii.

"low grade" wools "in the grease" often are as high as those for fine wools, and at times even higher.

As a result of the conditions under which it is grown, the greater part of the "fleece" wool supply is first assembled in ungraded lots by local merchants. These middlemen may be either local wool merchants who usually buy outright the small lots brought in by farmers, or the local general merchants who handle wool in connection with a general merchandise business, either on a factorage, or on a regular purchase basis. It is nearly always from these, rather than from the wool growers, that the Boston or Philadelphia merchant draws his eastern supply, and during normal years most of the business is done on a merchant, rather than a commission basis. In sluggish seasons the commission method is employed more freely by those small initial collectors of wool, but in years of wide fluctuations in price, all risks are shifted to the coast merchant as soon as he can be induced to take them. In a few cases eastern mills buy, in the "fleece" wool sections, direct from representatives who collect small lots for them. Occasionally, an eastern merchant may attempt to secure his supply direct from the farmers, but this method is expensive, slow, and pays only under exceptional circumstances. Most of the purchases in the east are of "bunched" lots bought by the representatives of eastern dealers who make regular circuits among the "country" merchants.

The "southern" wools are uniformly poor in character, and are almost a negligible factor of the wool supply, usually amounting to not more than about one-twentieth of the country's clip. They are, however, handled in much the same way as the fleece wools of the eastern states.

The great body of the domestic wool supply comes from the sheep ranges of the states west of the Missouri river. Montana and Wyoming together raise each year about as much wool as all of the states east of the Missouri and north of the Potomac. And these two with Idaho, New Mexico, and the three Pacific Coast states, contribute each year considerably more than all the other states of the Union combined.¹

These wools, known under the general term of "territory" wools, offer many sharp contrasts with the "fleece" wools of the east. They are clipped to a larger extent from wool sheep, as distinct from mutton or cross-bred sheep, since the Merino and other high-grade wool-producing strains still predominate on the western ranges, notwithstanding a substantial increase in cross-bred strains. The percentage of "fine" and "fine medium" grades among the "territory" wools is, therefore, relatively large. Throughout the western wool-growing states the typical flock is very large (often as high as five thousand sheep, and sometimes eight or even ten thousand), and consequently the wool comes into the market in large lots. The accompanying large capital and the characteristic business sagacity of the western flockmaster almost entirely eliminates any middleman like the country merchant of the east, except in the Pacific Coast states. Throughout the west the characteristic form of sale is direct to the "buyer" sent out by the wool merchants, or even by the mills of the Atlantic Coast.²

In years when conditions produce recklessness among buyers the western buying methods are ma-

¹ Bulletin, National Association of Wool Manufacturers, Dec. 1909, p. 524.

² Interviews with buyers and flockmasters in Billings, Montana.

terially modified by the practice of buying wool "on the sheep's back" months before it is ready for shearing, and hence long before its real value can be so much as guessed at. The year 1909 was such a year. An unusually heavy drop in prices during the early winter months combined with a confidently anticipated subsequent rise led many buyers to make large purchases of this kind, and by the end of February there were being offered, for ungrown wool, prices which in normal years would be considered good for high-grade clips. It is estimated that over one-half, and perhaps as much as two-thirds of the year's clip of "territory" wools was sold in this way. Such speculation is generally condemned by wool buyers as being altogether unsafe. But even those who condemn it most sharply are occasionally found to practise it.

The wool-handling methods of California and the Oregon-Washington district vary somewhat from those prevailing in the rest of the west — partaking of the nature of both the eastern and western systems. In California considerably more than one-half of the clip is usually sold to eastern buyers direct, while the remainder moves through San Francisco commission houses.¹ The California, Washington, and Oregon wools are almost the only wools clipped in this country which are shipped in bales. This baling is done at grading warehouses, and the bales, being of graded wool, are sold by sample.

In the Willamette Valley in Oregon, where about a million and a half pounds of wool are sold each year, the growers have been fairly successful in pooling their small lots into larger lots to be sold *en bloc* either by direct competitive bid or through a commission

¹ Report, Industrial Commission, vol. vi, pp. 335, 336.

house. In eastern Oregon during the past five or six years about forty per cent of the wools have been sold on "sealed bids" submitted by the buyers on appointed days. This system is peculiar in that submitted bids are binding on the bidders, but the grower may refuse all bids if he chooses to do so. The remaining portion of the eastern Oregon wools moved by private sale.

The work of the "buyer" sent out by the eastern wool merchant houses is the most important, most complex, and most uncertain feature of wool handling as it is practised in this country. The wool buyer is required to be a clever judge of the profit-yielding powers of each lot of wool bought, but the price he offers cannot be based on that judgment alone. There are crop data for the wool clip of the various wool-growing countries, but in this country these find no centralized point of interpretation such as is offered by the London wool auctions, or as may be found in the cotton and wheat-handling exchanges which do so much to stabilize prices in those commodities. The individual interpretation of these data lies at the bottom of the whole wool price-making system in this country. It is responsible for such sudden outbursts of speculation as occurred in the "sheep's back" buying craze in 1909, and it makes the buyer's position often very precarious. Collusion on the part of the buyers, or pooling by the flockmasters may be resorted to, but under ordinary conditions uncertainty and instability characterize this branch of the business.

The functions of the eastern wool merchant, so far as the domestic wools are concerned, resolve themselves into purchase of large blocks of high-grade "territory" wools, purchase or handling on

commission of numerous small lots of medium or low-grade "fleece" wools, assembling these, grading them, and storing them in lofts at the chief buying centers for eastern mills, ready for purchase in graded lots for delivery in quantities and at prices to suit their manufacturing customers. Many of these merchants also assume functions of a financial nature. It is not an uncommon practice for them to advance to the growers of the west, or to the small merchants of the east, substantial sums of money on consigned wool, or even on prospective clips, and it is sometimes necessary for the merchant to carry his manufacturer customer for months or even, in some cases, until he can realize on his manufactured product.

The handling of imported wools, while sometimes conducted as a special business, is more often combined with trade in domestic wools. As a rule it involves outright purchase, either direct through buyers sent out from here to cover the London, Liverpool, or Australian auctions or to buy in the Argentine or Cape markets, or else through brokers or agents permanently located on the other side.

It is clear that the actual work performed by the wool merchant is an important and complicated service and that it would not be easy to dislodge him from his recognized position. But that the service he renders is susceptible of improvement is indicated with equal clearness by the efforts which have been made and are now making to modify the organization or methods of the wool trade. These efforts may be placed in three general groups according to their underlying objects:

1. Those aiming at a complete reorganization of the American wool-handling system by

the concentration of the buying, selling, financing, and other phases of the business at some eastern point, and the introduction of the English auction system. The most noteworthy example of this type of effort was the New York Wool Exchange.

2. Those aiming at partial reorganization by bringing the buyers for eastern mills into closer contact with the wool growers, thus wholly or partially eliminating the eastern wool merchant.
3. Those aiming to preserve the existing system, giving due recognition to the place and work of the eastern wool merchant, while improving his equipment and facilities.

The New York Wool Exchange not only furnishes the most striking example of the first type of effort to modify the wool-handling system, but it was by far the most comprehensive attempt. This enterprise attempted to revolutionize nearly every phase of wool handling in this country. It not only undertook to perform much of the work of the wool merchant, but it aimed to change completely the established American methods of wool buying and selling by the introduction of the London system of public auctions. It was also an attempt to shift the center of the wool trade from Boston to New York, and to persuade New York bankers to look on wool paper as favorably as Boston bankers do.

Ample capital was secured for the enterprise during 1894, and a handsome building was erected in West Broadway, New York City. On the ground floor was a banking equipment for occupancy by the bank which was a part of the enterprise. The first floor

contained a huge salesroom, above which there were two floors of warehouse for storage which, with outside leased lofts, gave a capacity for 25,000,000 pounds of wool. The remaining five or six floors were occupied by offices for wool merchants and by a suite of rooms for the New York Wool Club.¹

Arrangements were made for auction sales on stated days, rules being drafted similar to those prevailing in the London sales. Quotations based on these sales were made public and an attempt was made to group these under heads sufficiently descriptive to make them useful to wool buyers generally. The first sale aroused a fairly wide interest. But each subsequent one developed some new inadequacy either in the system or in the equipment for carrying out the Exchange plans, and in November, 1898, after about two years of dwindling activity, the Exchange closed its doors and passed out of existence — salesroom, warehouse, newspaper publication, and the Tradesmen's National Bank, which was to have taught the New York bankers how to handle wool paper. The building, still known as the Wool Exchange Building, is now used for office purposes. The failure was complete.²

Numerous causes have been assigned for this total collapse. Some of these have to do with the personnel of the management and control, others relate to the unnecessary mechanical handling costs³ involved in putting wool into the hands of the mill buyers by this method. It is probable that each of these had some effect, but even if they had not been operative, such an enterprise, particularly in

¹ Bulletin, National Association of Wool Manufacturers, Sept. 1894, p. 316.

² Ibid., Dec. 1898, p. 361.

³ Interviews with wool merchants in New York, Boston, and Philadelphia.

New York, would have had to meet other and more fundamental difficulties. Chief among these are the lack of uniformity in American breeding and packing methods, and the peculiar character of our buying market.

The lack of uniformity in American breeding methods perhaps does more than any other one thing to make close or accurate grading of our wool impossible. Neither wools from any given locality, nor even special clips have a closely uniform character.¹ Most of them cannot safely be bought from the flockmaster or farmer without undergoing individual examination. When the Wool Exchange attempted to list and prescribe a minimum number of standard classes, it was unable to reduce the list to as few as 200 main classes, and the relations between these were very hazy. This is in sharp contrast with the relatively simple grading systems for cotton and wheat, and also shows a marked difference from conditions in either the English or Australian wool-auction warehouses, where the varieties are much less diverse. Since this lack of uniformity and lack of care in packing domestic wools makes a guaranteed sale without individual examination very hazardous, grading and classing clip by clip becomes obviously a function which must be performed somewhere in the selling process and makes wool dealing in this country more than a mere commercial operation.

The peculiar character of our buying market is another great obstacle to the success of such an enterprise as the New York Wool Exchange. The three classes of patrons for such an enterprise would be the wool merchant, the large manufacturer, and the

¹ Bulletin, National Association of Wool Manufacturers, Dec. 1898, pp. 363-368.

small manufacturer. The first of these would not profit materially by such a handling method unless the Exchange could cover the wool trade so completely as to enable him to dispense with the buyers he now sends out. This is hardly conceivable. The large manufacturer might get some substantial benefit from a compact handling system of this kind, but he alone would reap any great advantage. The small manufacturer who buys closely and must confine himself to specific quantities of carefully graded wool for delivery at fixed times would be unable to get what he wanted at the Exchange except in rare instances. In nearly every respect the wool merchant can serve him better. Both before and since the New York Exchange similar enterprises have been advocated. This, however, is the only one ever actually put in operation.

The second group of attempts to better American methods of wool handling — those aiming at bringing growers and manufacturers into closer contact — have also failed to accomplish what was expected of them. These attempts first took the form of local grading and auction warehouses at wool collecting points in the west. Warehouses of this type are to be found at Billings, Big Timber, and Great Falls, Montana, and at various points in Oregon, California, and in the southwest. These, as a rule, furnish fairly satisfactory storage facilities. Moreover, to the grower they supply an opportunity to list and store his wool and the privilege of offering it for competitive bids on the lot, on set days and under more or less complete rules for selling and delivery; while to the wool buyer they offer a chance for careful inspection of the lot and for equality of opportunity in bidding. Some of these local warehouses and

exchanges are operated by local growers' associations, and others, particularly in the southwest, are owned and operated by the local dealers either as companies or as associations, in which cases they are used to divert the wool trade of the particular district to special points and often are accompanied by other inducements such as free storage or reduced handling charges.¹ Some of the local warehouses have been in existence since the early nineties, but as a whole they have not brought about the directness of contact between grower and manufacturer which was their original purpose. They have, however, proved to be a valuable convenience for the eastern merchant buyer at many points.

The latest development in the second group has been the establishment of warehouses located at the eastern terminals of the transcontinental railroads, and operated as co-operative storage and sales depots, where it was planned that the growers should offer their clips direct to the manufacturers. The Wyoming Wool Growers' Association in 1908 built a warehouse in Omaha and put in it during its first season about a million pounds of wool. Auction sales were announced for December of that year,² but the mill buyers failed to respond, most of the sales made were to the same old eastern buyers, and the auction bidding feature failed altogether. The warehouse is now used for ordinary storage purposes and the auction feature has been abandoned.³

A plan much more elaborate and much better worked out is that of the National Wool Warehouse and

¹ Report, Industrial Commission, 1900, vol. vi, p. 330.

² Bulletin, National Association of Wool Manufacturers, Dec. 1908, p. 357.

³ Interviews with wool merchants in Boston.

Storage Company of Chicago. This is a concern incorporated under the laws of West Virginia with \$400,000 capital. The National Wool Growers' Association is heavily interested in the enterprise, and its members subscribed for \$250,000 of the stock, the remainder coming from Chicago merchants.

In 1909 a fireproof warehouse five stories high 150 × 250 feet, with good rail connections, was built in Chicago, and it has been equipped with handling systems designed to reduce to a minimum all moving and storage costs. Each wool-growing stockholder is under agreement to deliver each year for three years not less than 5000 nor more than 6000 pounds for each \$50 share of stock he holds. In this way the warehouse is guaranteed for three years an annual total of at least 25 million pounds of wool. It was the original purpose to induce the eastern buyers, and especially the mill buyers, to come to Chicago to make their purchases.¹

The original plan has been modified during the past year, and now the wool is merely assembled for storage in Chicago and is sold entirely on a commission basis, partly through a Chicago sales office, but chiefly through branch selling offices in Boston and Philadelphia.² These selling offices keep stocks on hand and sell to the mills by private sale exactly as if they were the usual type of merchant or commission house, all sales being made on the usual commission of one cent per pound. This enterprise, therefore, has achieved its original purpose of direct contact between the grower and the mill, not by its original plan of compelling the mill buyer to come to a storage warehouse for his wool, but by going into the wool

¹ Bulletin, National Association of Wool Manufacturers, Dec. 1909, p. 530.

² Interviews in Boston.

merchant business and taking the wool to the mill buyer.¹

These efforts to "eliminate the middleman" in the wool business of this country appear not only to have failed to do so, but also to accomplish anything except in so far as they have established institutions which the middleman could make use of, or as they have done his work in the established way.

The third group of efforts to improve the wool-handling methods of the country by recognizing the merits and utilizing the form of the present system, while correcting some of its defects, bids fair to accomplish results far more satisfactory than even the best achievements of the other two groups.

The new wool warehouse in Boston is the newest and most striking illustration of this group of changes. The warehouse has a storage capacity of over 100 million pounds, or more than one-third of the clipped-wool yield of the country in ordinary years. Moreover, it is so constructed as to reduce all the necessary costs of wool handling and storage to an absolute minimum. The persons by whom it has been erected are in close association with the American Woolen Company; and it has been leased to dealers from whom that company is supposed to purchase most of its wool.² This enterprise represents a distinct advance in the physical equipment of the Boston wool

¹ An interesting feature of the work of the National Wool Warehouse and Storage Company is the effort it is making to better packing methods of the "territory" wools. The president of the company, J. E. Coe-griff, is spending several months of this season in holding meetings of flockmasters and bankers in the wool-growing states and demonstrating to them the advantages of greater care in packing methods, — the elimination of such practices as "false packing," "double fleeces," etc., and is urging other reforms such as the use of paper twine for fleece tying. He is also at work on plans for standardizing of breeding practice. It is hoped that in this way the company may raise the standard of the wools passing through its hands, and perhaps ultimately put the American breeding and packing methods on a par with those which prevail in Australia.

² Bulletin, National Association Wool Manufacturers, Dec. 1909, p. 523.

trade, and it will be followed, no doubt, by other devices to meet the rise in the handling costs at the chief wool market of the country.

One line of improvement which is being given serious attention by Boston wool merchants, altho it has not yet assumed concrete form, is the betterment of selling methods by introducing a modification of the Bradford conditioning house plan. Under the present methods of wool selling a merchant may send, for instance, three "sample bags" of wool of established grade to three separate mills for scouring test. He may be convinced that the three bags are identical in grade, and yet the return from the tests may show a variation of from three to seven cents in the scoured basis price, according to the test methods applied at the different mills. A conditioning house, making a disinterested test by invariable standard methods, would give a fairer basis for the transaction from both sides. One Boston dealer estimates the annual losses to the wool trade from improper scouring tests alone at not less than \$5,000,000.

The place of the wool merchant as an intermediary between the wool grower and the wool manufacturer in this country seems to be firmly established. He performs a function which cannot be performed either safely or satisfactorily by grower or manufacturer except in isolated cases, and, on the whole, he does well his risky and complicated work. If the wool-handling methods of the United States are capable of material betterment it is along the line of increasing the efficiency of the wool merchant's methods and equipment, and not by the elimination of this type of middleman.

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REVIEWS

RECENT BOOKS ON THE PRINCIPLES OF ECONOMICS

It would be hard to find five general works on economics that vary more in method, viewpoint, and purpose than the five books with which this review is concerned. Those by Blanchard, Meade, and Johnson are designed as textbooks. The first is a cyclopedic, systematic, amply illustrated exposition of general principles for the use of first-year students in French schools of law. The second is a concrete, untechnical, descriptive work, referring only incidentally to underlying principles, and intended primarily, like its companion volumes in the Modern Business series, for the use of mature business or professional men who cannot enjoy the facilities of schools of commerce. The third is a brief, closely reasoned outline of theory, with incidental illustrative matter, designed mainly to meet the requirements of American college students. No one of these three develops new views or handles old doctrines in ways particularly new. On the other hand, the chief significance of the two English contributions — by Wicksteed and by Hobson — is doctrinal. The views they develop are distinctive, and present a fresh alignment of theories underlying social policy. This quality fortunately does not detract from the serviceability of either book for class-room purposes. On the contrary, with mature students it would not be easy to find material more stimulating to discussion than long assignments in Wicksteed's detailed analysis of economic processes,

or shorter ones in Hobson's more condensed but more varied treatise.

Blanchard's 700-page book, *Cours d' Economie Politique*, is a first volume; the second will meet the needs of second-year students in French law schools. In his view, logical requirements point to the conventional fourfold treatment of political economy, in this order, — production, exchange, distribution, and consumption. For pedagogical reasons he departs from this order, and covers in the present volume production, consumption, and the greater part of distribution. The treatment of value, exchange, and certain remaining phases of distribution is left for the second volume. The latter portions are to his view the more difficult aspects of economic study, and may therefore appropriately be left for second-year students. Regard for the pedagogics of the situation is, however, not a distinctive mark of the book. It is formal and systematic in its method of treatment. Definition, lengthy classification, and orderly, if superficial, analysis follow one another in a manner often more pedantic than vital. The fundamentals of varying concepts are given less attention than their bearings on social policy; but the eclecticism that this statement indicates is secondary and historical, rather than primary and contemporary. The views of Adam Smith, "Stuart Mill" and Senior, of Bastiat and Say, and of Marx, furnish much of the material for discussion. These are presented, as well as contrasted and correlated with other views and with contemporaneous data, largely through the medium supplied by the treatises of Beauregard, Cauwès, Leroy-Beaulieu, Colson, and Gide. There is no reference to the development of thought in other countries during recent decades, except as that has filtered through the writings of the French authors named. Indeed, to do this was no part of the author's purpose; but the pretentious size and scope of his treatise naturally direct attention to the omission.

The treatment of production is conventional in outline and matter. The classical, threefold division of productive

factors is adopted. The nature factor is comprehensively described, climatic and physiographic elements receiving a due share of emphasis. In the analysis of the labor factor, the old distinction between productive and unproductive labor is refined into one between directly and indirectly productive labor; but there is no trace of Austrian influence in the change. The contribution of capital is considered in its rôle as a derived agent devoted to future production. The strength of the modern stimulus to the related processes of saving and investment is perhaps over-emphasized in this connection. The treatment of the elements of production is followed by an independent exposition of the social factors influencing production. In this, most emphasis is placed on tendencies relating to the scale of production and to growth of population. His conclusions are that in agriculture the trend is obviously toward production on a small scale, but that in other fields varying scales of organization will parallel one another, varying needs being met in different ways. The discussion of the trust movement in the United States is naively simple. Mr. Havemeyer's well-known dictum is accepted as conclusive evidence of the view that our trusts are largely tariff-made in their origin. There is an intelligent discussion — based on Colson — of the regulative influence of cartels in time of industrial and financial crisis. A large measure of anxiety over the diminishing French birth-rate appears in the lengthy discussion of the population question. Little hope is found in legislative measures encouraging marriage and parenthood. The tendency toward decrease is regarded as a necessary outcome of the economic and social changes of the century. These will progressively affect other nations until conditions are equalized. It is pointed out that the situation in this respect among the older-established American families is even more pronounced than in France. The conception of diminishing returns is the old Malthusian one that contrasts diminishing productivity with increasing population. But a tendency toward deficit is shown to

be nonexistent. "The future of the human race appears to be in no way menaced by it." The author likewise contrasts increasing with diminishing returns in a way that again combines historical with technological considerations. The treatment of consumption, largely a discussion of individual and national traits in the matter of expenditure, is for the most part trite and preachy. "Economy in expenditure is excellent in itself, but it ought to be reasonable, i. e. exercised with moderation." The definition of luxury stands out in agreeable contrast with this: "Luxury is the consuming of a relatively large amount of goods or services for the satisfying of a relatively superfluous need." The treatment of distribution brings out no clean-cut, fundamental conceptions. Juridical considerations are developed at length. The economic theories of earlier writers are outlined, as well as ideals and programs of reform in distributive methods. Much more attention is devoted to a description of conditions surrounding the distributive process than to the process itself. Most space is given to labor questions. On the whole, Blanchard's general attitude on social policy is a feebly qualified individualism.

Meade's *Economics of Business* is the introductory volume of the Modern Business series of text-books. It gives a distinctly practical exposition, emphasizing the actualities of business experience by extended and typical illustrations rather than through generalization. "The book presupposes no previous knowledge of economics other than that possessed by any intelligent person who reads the daily newspapers and keeps his eyes open." Tho the preface disclaims a formal arrangement of the volume into divisions and subdivisions, the arrangement of the material is along familiar lines. There is no treatment of consumption; but production, exchange, and distribution are discussed under quite the usual categories. Whether practical problems of present moment should be treated in chapters immediately preceding or following those dealing with questions of general inter-

pretation, or in Part III on "Economic Problems," seems to have been largely a matter of whim with the author. For instance, chapters on "The Training of Workers" and on "Woman and Child Labor" follow the chapter on "Labor" as a factor in production. A chapter on "Location of Industries" properly precedes one on "Large Scale Production" in the treatment of business organization in Part I; while the chapters dealing with monopoly and the trust movement are relegated to Part III. It is this sort of arrangement, probably as helpful as it is planless, that the author doubtless has in mind in the prefatory remark above referred to.

The great strength of the book is its direct touch with things that are and forces that move in the business world. Tho there is throughout a tinge of the academic, it is only enough to anchor practical discussions to essentials of viewpoint. The nature factor in production is emphasized on the side of its latent powers. Not diminishing capabilities of the soil, but the unexploited "vast reservoir of power" about us is the thing emphasized. Labor, again, is a factor the immediate functioning of which in the productive process is not the most significant point, but its increasingly efficient functioning through the elimination of child labor, the training of workers, and the improving of their environment. This shifting of emphasis from static to dynamic aspects is not so prominent in the chapter on capital; but it again appears in the treatment of business organization, a field in which improvements of method are matters of intimate familiarity to the author.

Part II, dealing with exchange, is devoted mainly to money and credit. One chapter is given to "Prices." The discussion bears not so much on the relation between money and prices as on the relation of value to price and on the factors influencing supply and demand; and there seems to be no logic in consigning matters so fundamental to such an inconspicuous and subordinate place. As regards the viewpoint of this analysis, it is conceded that "altho market prices may change and fluctuate in the

manner just described, they are, however, in the last analysis, determined by the comparative utility of commodities and money to their consumers." It is to be regretted that the recognition of this fact is so long delayed and is driven home in two paragraphs of such comparative brevity. On turning to Part III, on distribution, one's attention is at once arrested by a description of forms of business organization ("Forms of Ownership"), used as an introduction to the subsequent exposition of surface aspects of distribution. Whatever the reason for this departing from the more conventional order of treating this topic (under production), there are conceivable advantages in the change. In the first place, by this means there may be avoided the confusion that often arises from the closely connected treatments of the advantages and disadvantages of varying sizes of the business unit and those of the various forms of business organization. In the second place, such an introduction to distribution might well contribute to clearness by necessitating sharp distinctions between different classes of workers, and an equally nice differentiation between shares of income that are sometimes treated as wages of management, sometimes as profits. In the present instance, the former distinction does result; the latter does not. Under causes affecting the rate of wages, joint reference is made to the \$50,000 salary of the railroad president and to the work he performs. The salary is direct compensation for the work "which may mean profits of many millions of dollars to the company which he serves." Later, in the discussion of profits, we find that "in the great majority of cases, the large profits of industry have been the result of superior ability. We have seen that most business men do not make profits; a few men do make them. The primary reason for this distinction is that the few are more liberally endowed with brains than the many." How shall we know who are the few who do reap profits? To what extent do dividends to shareholders encroach on the ability wage of the railroad president? Or is it merely that a certain proportion

of the dividend serves as tangible evidence of the magnanimity of the president? But it is no part of Meade's intention to draw fundamental distinctions. His treatment of distribution is from the standpoint of the business organizer who makes outlays. These are roughly classified and simply explained in the familiar business terms. Rent, wages, interest, profits, and taxes are from this angle objective payments, the various forms of which need to be described rather than subjected to the more analytical tests of identification and explanation.

Strangely enough, the place in Meade's book in which to look for his underlying views on distribution is not in the chapters expressly devoted to that subject, but in the concluding part; which might to advantage have been entitled, not "Economic Problems," but "Public Aspects of Economic Problems." This applies particularly to the chapter on the "Problem of Monopoly." The view is there advanced that monopoly is a perfectly natural phenomenon; it is not "like some foreign substance which may get into the industrial mechanism and prevent its perfect running. . . . Economists who hold this view of monopoly believe that there are certain fundamental laws in economics which are as universal and permanent as the law of gravitation itself. . . . Those who oppose this general view of monopoly contend that there is nothing inherently wrong in the principle of monopoly, that it is a general phenomenon of all economic activities, and that practically everybody, laborer, professional man, capitalist, and landlord, is a monopolist. . . . Tho the extreme concentration of monopoly power in the hands of some may give rise to serious problems, the monopoly principle, nevertheless, pervades the whole business world, and is not to be condemned on all hands because it may sometimes give rise to evil results." Monopoly is an accompaniment of progress. The monopoly fund is identical with the social surplus that has resulted from the rapid growth of productive power during the century. "This means that every one who is getting some of the product of this social surplus

is in reality getting something for which he has not rendered an equivalent service. The social surplus affords thus a kind of monopoly fund on which all the present factors of production are constantly drawing. . . . There are few classes of society, nay rather, few individuals in any class, who have not been able to get and to keep some portion of the social surplus." Conviction of the truth of the last statement should have restrained the author from the futile suggestion that a widening ownership of corporation securities will afford a significant safeguard for the masses against monopoly extortion. In many parts, the book shows unmistakeable ear-marks of hasty and off-hand preparation. Yet despite these evidences of hurried work, it is well adapted to the purpose for which it was written.

Johnson's *Introduction to Economics* is a revision of his earlier *Introductory Economics*. The chapter arrangement and titles are substantially the same, and the order of treatment and phraseology within chapters has not been vitally changed. Some paragraphs that appeared in the older work have been dropped and new ones have been inserted; a summary statement appears in italics at the head of each paragraph; and many new illustrations have been introduced. In view of this similarity between new and old, it is almost needless to say that the present work has all of the marks of clear, definite, and logical exposition that characterized its predecessor. In scope and method it stands in sharpest contrast with Meade's book. Theoretical aspects are constantly emphasized; the teacher is relied on to supply the concrete material best adapted for illustration. "An efficient teacher can base a highly practical course upon a text-book which is fundamentally theoretical." Beginning with a discussion of value, needed prominence is given to the fundamental nature of the laws of price; but the distribution of emphasis between demand and supply elements is so even that the "costs" basis of price stands in a logical position in no wise secondary to the "consumers' estimate basis." This procedure

makes it easy to swing to the frankly implied "costs" attitude that underlies the whole marginal productivity program of economic reform. In this analysis it comes out very clearly that the relation between the Austrian viewpoint and the marginal productivity treatment is in no respect vital. Indeed, essentially they are inconsistent. Only as regards the superficial aspects of methodology is there any resemblance. Both deal with margins; but the one treats subjective, the other objective, considerations. In the one case, subjective value is the primary influence in distribution; in the other, objective product. With the one, marginal utility should be merely a resultant and index; with the other, it is a determinant and measure of results. Johnson's discussion serves to bring out clearly these differences. Margins, and usually marginal costs, are regularly accorded a determinative influence. It is true that when the emphasis is shifted to costs, reference is frequently made to the secondary nature of those items; but these are after-concessions, soon forgotten when the emphasis turns once more to aspects of productivity revealed through hypothetically successive outlays and marginal costs. This tendency reaches its final conclusion in the proposition that free enterprise approaches justice only when competition rules, that monopoly is unnatural or abnormal because it interferes with cost prices, and that social intervention must guarantee competition or assume such price-fixing functions as will restore a "normal" or cost-price situation. A genuine shifting of emphasis from supply to demand factors, as primary in price determination, should lead to the view that monopoly is as normal a phenomenon as competition, that it is not confined to the organizing factor in production, and that its influence must therefore regularly be reckoned with in determining the share of any factor in the productive process. Johnson's book, throughout, affords an unusually able and clear presentation of the normal or static view of things.

Wicksteed's *The Common Sense of Political Economy* is in three parts. Books II and III, containing 300 of the 700 pages, are largely of an excursive and illustrative nature. They will have main interest to those of a mathematical turn of mind. Book III, however, lays considerable stress on the social implications of theories developed earlier in the volume. Book I, the constructive portion of the work, is of main interest. Goethe's "Ein jeder lebt's, nicht vielen ist's bekannt" truly affords the motive and key to the treatise. The author assumes no previous acquaintance with works on political economy; and he relies, as he says, on "no hypotheses except such as the common experience of life suggests and explains." But this does not make the reading of the book an easy task for any but a mature and very thoughtful reader. For there is an obvious tendency not to neglect anything that has even a remotely fundamental bearing on matters of interpretation; and the whole treatment reveals the craftsmanship of a highly philosophical mind. Let me illustrate by his analysis of what is often termed "the economic motive." To Wicksteed the connotation of this phrase is a false one. Truth demands the use of colorless terms, such as "economic relation" or "economic force"; motive in any strictly personal sense, to his view, is conspicuous by its absence. The relation is not an egoistic nor an altruistic one, but one of "non-tuism." Economic life is entirely unmoral, or morally indifferent. "The economic organization of society in itself does not in any way discriminate between worthy and unworthy ends." "The catholicity of the economic relation extends far enough in either direction to embrace both heaven and hell." "It would be absurd to call a man selfish for protecting his king in a game of chess." "Only an expert can distinguish between the harbor light supported by a small toll on the cargoes it guides to safety, and the light displayed by the wrecker who hopes to pick stray salvage from the wealth he has taught the sea to swallow." This outlook on the economic life is well summarized in four propositions that show the fundamentals both of viewpoint and of method:

(a) "That the economic relation is entered into at the prompting of the whole range of human purposes and impulses, and rests in no conclusive or specific way on an egoistic or self-regarding basis.

(b) "That the economic forces and relations have no inherent tendency to redress social wrongs or ally themselves with any ideal system of distributive justice.

(c) "That the hypothesis that the economic relations can be isolated, even if taken only as a first approximation, is too remote from the fact to be admissible, and would be useless and superfluous in any case; and that the economic relation, as well as being naturally allied to other relations in every degree of closeness, has itself a tendency to beget these other relations.

(d) "That it is nevertheless both legitimate and desirable to make an isolated study of the economic relation and the economic forces, tho not on the hypothesis that they actually exist or act in isolation." (pp. 169-170.)

The phenomena of the market are shown to be the central and unifying ones in economic life. But these cannot be truly interpreted without a preliminary study of the broader principles underlying the personal administration of resources and of choice between alternatives. The book therefore begins with a detailed exposition of the Austrian analysis (its paternity is patriotically ascribed to Jevons), illustrated by reference to the whole range of rational and irrational, impulsive and deliberate, conscious and "even unconscious" choices.¹ In the endeavor to make this

¹ The following are typical illustrations of the breadth of application (pp. 79-80).

"Caesar tells how when surprised by the Nervii he had barely time to harangue his soldiers, obviously implying that the harangue was shorter than usual. He felt that a few moments, even at such a crisis, were well devoted to words of exhortation to his troops; but their value declined at the margin, and the price in delaying the onslaught rapidly rose; so the moment was soon reached when the time could be better spent than in prolonging a moving discourse. In a story of South America, (*sic*) after the war, we are told of a planter who, when warned by his wife in the middle of his prayers that the enemy was at the gate, concluded his devotions with a few brief and earnest petitions, and then set about defending himself. Had he been a formalist those final petitions would never have been uttered at all; but under the circumstances the impulse to prayer, tho sincere and urgent, became rapidly less imperative and exacting relatively to the urgency of taking steps for defense, as the successive moments passed. . . . An entirely devout and sincere person may find himself in the dilemma of having either to curtail (or omit) family prayers or to hurry a guest over his breakfast and perhaps run him uncomfortably close for his train."

subjective analysis true to life, Wicksteed goes into details that most of us would willingly take for granted. But it is easy to forgive this sin when following the beautifully consistent and significant constructive treatment, based on this early detailed analysis. Ordinarily there is much confusion in the effort to bridge the gap between the discussion of the canons of individual choice and that of market price. Wicksteed's analysis is unusual in the directness with which it demonstrates the primary dependence of market phenomena on personal choices between alternatives. He carefully discriminates between the individual scale of choice and the communal one. The former contains only elements of the latter that are relevant, *i.e.* such as concern items that appeal to particular personal tastes; and the latter contains elements of the former only as respects items that enter into the circle of exchange. The dependence of the collective scale on the personal scale once demonstrated, he never forgets this key to an interpretation of the whole of our economic life. The buyer may believe that the seller fixes the price. The seller may often think so too. But Wicksteed holds to the simple truth that "It is the collective mind of the purchasers, then, as estimated by the sellers, that determines the price proclaimed by the latter. The sellers read the collective scale, to the best of their ability, and announce their reading to the individual purchaser." What a thing has cost cannot determine its value; but what a thing will cost may determine whether or not it will be made. This view, accepted with all that it logically implies, leads to consistent reasoning. The theory of monopoly price rests on precisely the same broad principles as those on which the theory of the competitive market is based; and distribution becomes simply a price phenomenon. Interest payment is a phenomenon of the market in advances. Payments for the use of land (rent) and for the use of other durable goods (hire) have elements in common with interest. In each case the payment, in its primary elements, constitutes a premium on advances connected with the anticipation

of future resources. "The comparative breadth of the stream which is turned to long-service expenditure and to indirectly productive effort, will depend partly on the nature of the tastes, desires, and impulses of the community, partly on the amplitude of its resources, partly on their distribution, partly on the vividness with which the wants and pleasures of the future are realized, and partly on the sound judgment and integrity of all its members, more especially of those who are most active in directing its industrial affairs."

Earnings, as a distributive share, obey the same principle as do interest payments, subject to an important qualification. Size of population, and consequently of labor supply, is determined largely by non-economic considerations. Prudence or recklessness, abundance or scarcity, custom and tradition, impulse "ranging over the whole scale of the material and spiritual nature," conviction, deliberate resolve, and calculation, all influence to greater or smaller degree the supply of human effort. But at any given time, supply being what it is, market considerations govern the return. The better society is supplied with the thing a worker makes, the lower will be its place on the collective scale. Marginal worth is an index of the remuneration to every kind of human effort, precisely as it is of the prices paid for commodities. Despite a tendency to exaggerate the degree of identity between actual earnings and the worth of services rendered, particularly of the "less-favored," "unprivileged" members of society, one must acquiesce in the view that the main hope for the future lies in agencies and influences that will promote the occupational and locational mobility of workers. To breed, rear, educate, and train them "so that they shall possess the vigor, the habits, and the particular skill which are likely to make them worth most," and "to shift them to places and conditions in which they may be worth more than where they are" are important expedients. Wicksteed with cosmopolitan outlook condemns the working class gospel of "less work but more of it"; this gospel

is as privately true as it is publicly false. "When we shall understand that local distress is incidental to general progress, we shall not indeed try to stay general progress in order to escape the local distress, but we shall try to mitigate the local distress by diverting to its relief some portion of the general access of wealth to which it is incidental." The question must indeed be faced, may not "local distress" often be due to overtaxed individual powers, and to a sweated wage that more largely reflects local exploitation than the worth of workers' services? Subject to such qualifications, it is easy to endorse the advocacy of social improvement through "a system of true education, at once industrial and human, that shall be a great instrument for training, sorting, and directing the faculties, developing the character of the community so as to make every talent available for the highest and most urgently needed function which it is capable of performing."

In reviewing so consistent a work as that of Wicksteed's one hesitates to refer to seeming minor inconsistencies of analysis, or to pass judgment on the larger question of the completeness of the author's theoretical structure. Yet criticism must be made of a tendency to apply the idea of diminishing marginal significance in such way as to identify diminishing utility with diminishing returns. In the one case the decline is in terms of feeling, is subjective; in the other it is in terms of goods, is objective. It is worth while to preserve and emphasize this distinction. The failure to do so in the present book has helped to bring the interpretation of "earnings" perilously near a productivity, as distinguished from a price explanation. The larger question, of the completeness of Wicksteed's theoretical structure, is brought out the more sharply by the very unity of his treatment, and I do no more than raise it because I am unable to give a satisfactory answer. Are there not fundamental questions of economic theory that might well be viewed independently of the problem of value? In other words, are there not relations between

goods and men, vitally affecting general prosperity and individual welfare, that might be approached better in other ways than through the channel of the estimates of importance which men attach to goods ?

It seems to me that Hobson had some such feeling when he wrote the *Industrial System: An Inquiry into Earned and Unearned Income*. Unfortunately, he sways at times from explicit repudiation to tacit acceptance of certain aspects of widely accepted views. This results in fallacies that weaken his general argument. But fortunately they detract more from the consistency of his reasoning than they do from the exceeding suggestiveness of his analysis and the equally large significance of the resulting program. He begins his argument with a description of the industrial structure and the productive process, tracing the relations of trade to trade throughout the successive operations that gradually transform raw materials into final product. The payments made to the various factors in the process are pictured as incomes that evoke fresh applications of productive power in full degree and in appropriate forms. At this point begins the breach with assumptions underlying "authoritative" views. Hobson repudiates the assumption that competition does or can apportion the product of industry among the various producers according to the respective importance of the services they render; and this, whether or no the rent of land be treated as an exception, or allowances be made for "frictional" interference with the workings of competition. This so-called friction is quite as natural as competition. He likewise denies the possibility of a separatist analysis such as imputes specific units of product to specific units of any productive factor, marginal or otherwise. Production is a process characterized by organic coöperation, not by the mechanical union of separate elements any one of which can afford a key to the contribution of any other. Indeed, so far as the determinant influence of any marginal unit is concerned, quite the opposite is the case: "the complex of forces which, through supply and demand determine the

price per unit of each factor, determines the margin." Hobson's own theory of distribution is based on a fundamental distinction between costs and surplus. Costs, to him, are the payments necessary to evoke and maintain the use of existing productive powers in their present force or volume. Such necessary or minimum payments to landowner, capitalist, or laborer represent a natural and permanent economic harmony. This part of distribution admits of no permanent disturbance or evasion. But industry creates a product beyond these maintenance costs, and the surplus is not distributed in accordance with any tendency that inheres in the conditions of increase of supply for the productive factors. It is taken by the owners or embodiments of such factors according to their economic "pull" or monopoly power. The factor relatively scarce at any time or in any situation, whether capital, land, ability, or manual labor, is in a position of advantage. This it uses to absorb surplus as the price of its coöperation in the productive process. But the surplus must be further differentiated in accordance with the effects of its use in the evoking of productive power. That portion of surplus is "productive" which evokes or feeds a new or added supply of productive energy; that portion is "unproductive" which exercises no such influence. Surplus diverted, in this latter sense, from its proper work of furnishing growing power is "unearned income." In this view, the categories of rent, wages, interest, and profits are not significant in any primary sense. The elements of prime importance are threefold:—

Unproductive Surplus (unearned increment)	C
Productive Surplus (costs of growth)	B
Maintenance (costs of subsistence)	A

"A. Maintenance includes (1) minimum wages for various sorts of labor and ability necessary to support and evoke their continuous output at the present standard of efficiency; (2) depreciation or wear and tear for plant

and other fixed capital; (3) minimum interest necessary to support the 'saving' involved in the production and maintenance of the existing fabric of capital; (4) a 'wear and tear' provision for land.

"B. The productive surplus includes (1) minimum wage of progressive efficiency in quantity and quality of labor and ability of various grades; (2) such rise of interest above the subsistence rate as is required to evoke and maintain the increase of saving required for industrial progress.

"C. The unproductive surplus consists of (1) the economic rent of land and other natural resources; (2) all interest beyond the rate involved in A and B; (3) all profit, salaries, or other payments for ability or labor in excess of what is economically necessary to evoke the sufficient use of such factor of production." (p. 80.)

Improving industrial methods tend constantly to swell the surplus. Some portion gradually contributes to industrial growth by raising the payment to labor and capital above the bare subsistence point. But much does not so find progressive uses. Segments pass, according to a law of superior force, to landowners, capitalists, laborers, entrepreneurs, or combinations of these, in ways that involve conflict and to uses that are essentially unprogressive. The great problem of our industrial civilization is in consequence that of devising measures "to secure that the whole of the industrial surplus shall be economically applied to the purposes of industrial and social progress, instead of passing in the shape of unearned income to the owners of the factors of production, whose activities are depressed, not stimulated, by such payments."

Such, in outline, is Hobson's theory of distribution. There are, indeed, some minor inconsistencies. First, his notion that margins are determined rather than determining in their influence. If this be true, why say: "Just as every unit of labor-power receives a price measured by the expense of evoking the most expensive part of the supply, tho some output of labor-power may be pleasurable to the worker, so all the saving receives the price which

must be paid to the most expensive savers, those who would not save at all unless they were paid, say, three per cent ? ” Later he qualifies this view in dealing with the price of competitive products: “ The expense of producing not the ‘ last ’ but a unit of the product by a normal type of efficient business may be said to be the direct determinant of the normal supply price. ” We may agree with the contention that margins have no causative force. But are costs any more primary in their influence than are margins ? Consistency requires that all payments made for goods or for services, direct or indirect, be regarded as primarily demand-made, — as reflections of the collective scale that Wicksteed so clearly pictures. Value and price are social facts, not matters determined by the expense of producing any unit of supply, mean or marginal. And both mean and marginal apparently figure with Hobson, despite the fact that neither interpretation need form a link in his main chain of thought. Indeed, in another place (p. 99) he gives expression to the truth just stated. And his method of measuring payments for the use of productive instrumentalities (human or non-human), in terms of a price per standard unit of productive power, leans in this direction. Again, we have in this volume a restatement of his well-known opinions on the fallacy of saving. The error here seems to arise out of a “ money stimulus ” interpretation of the varieties of demand. Saving is “ a refusal to apply it (money) at the retail stage in the ‘ demand ’ for commodities. The ‘ saving ’ persons who reduce the ‘ demand ’ for commodities apply the same quantity of ‘ demand ’ at various interim points in the industrial process. ” This is said to result in glut or under-consumption, with consequent industrial crisis and unemployment. The contrast appears to be an unreal one. Does increased investment really mean less spending for commodities ? Is it not due to a forecast of increased spending possibilities ? And are these not realized unless the intermediate spending on producer’s goods is badly apportioned ? The problem at bottom is one involving a nice quantitative relation, not between money and the

different forms of goods, but between goods of the varying intermediate and final forms. Shall we have more ploughs and threshing machines or more rubber-making machinery, more wheat or more automobiles? A statement more in harmony with Hobson's general pragmatic view would be this: spend on consumables all that is needed for health, strength, skill, and spiritual outlook — the qualities that beget efficiency; beyond this, save and invest as much as possible, apportioning such surplus wisely among productive uses. Do this all to the end that there may be more and more goods to devote to efficiency promotion.

But despite inconsistencies, there is a vastly significant truth in Hobson's general view. The idea of surplus is not, so clearly as should be, that of mere excess of goods over subsistence needs. The argument errs too, doubtless, in injecting ethical considerations that warp the view of economic tendencies. To call "unearned" any income resulting from monopoly power — viewed by him as a perfectly normal phenomenon — is to beg a very important question that at least does not lie without the field of economics. Besides, how income is used is much more important than how it is earned. But in any case, this truth remains: there is a growing surplus of goods above the subsistence needs of the moment. The surplus increases at a rate beyond that required for maintenance and healthful growth of social-productive capital. The big problem is that of diverting relatively ill-used surplus to the work of bettering living and working conditions. The cumulative results of such a policy will be reflected in enlarging comfort, increasing efficiency, and ever-growing surplus. To view the situation thus throws new light on problems of taxation and state function, of labor unionism, of private benevolence, and of related and subsidiary questions. Hobson's book must be accorded large credit for giving new impetus to this widening view, as well as for applying the increasingly popular pragmatic test to current economic theorizing.

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MR. MALLOCK AS STATISTICIAN AND BRITISH INCOME STATISTICS

MR. W. H. Mallock is known to economists as a vigorous and assiduous opponent of radical schemes of social reorganization. His weapons, for the most part, have been rather crudely forged theories of his own making, — curious inversions, sometimes, of the notions of orthodox socialism itself. In his latest book ¹ theories are ostensibly replaced by statistics, but the animus is unchanged. The specific attack is this time upon the Marxian prophecy of the progressive impoverishment of the laboring classes and the accompanying extinction of the middle classes. Tho now disavowed by socialist leaders, this doctrine has penetrated too far to be easily dislodged. Moreover, that “the rich are getting richer and the poor are getting poorer” is a fairly prevalent belief older than the Marxian dogma and likely to outlive it.

It must be admitted frankly that under the canons applicable to scientific statistical work Mr. Mallock's book could not be given a high rating. But there is something to be said for books of this kind. Mr. Mallock is dealing with a subject of public controversy in which unproved assertion is met usually by assertion equally unproved. He has put together what seem to him the facts in the case, and has indicated his sources and explained his estimates. In short, those who dislike Mr. Mallock's conclusions must reckon with what he puts forth as facts. For the time being, at least, his figures hold the field.

Those not controversially inclined will prefer to regard Mr. Mallock simply as the latest of the long series of writers, — Dudley Baxter, Leone Levi, Sir Robert Giffen,

¹ W. H. Mallock, *The Nation as a Business Firm*. London: A. & C. Black; New York: Macmillan. 1910.

Viscount Goschen, Mr. Chiozza Money, and others, — who have dealt with the statistics yielded by the assessment of the British income tax. But Mr. Mallock tries to reach more precise and detailed conclusions than any of these others, and his work contains a correspondingly larger element of estimate and conjecture. It is political arithmetic of the old sort, rather than statistics. These precisely formulated details give Mr. Mallock's results an air of verisimilitude, but it is safe to infer that only his general conclusions are really worth serious consideration.

The income tax statistics have been thoroly canvassed in recent years in connection with the revision of the tax itself. The revisionists desired to differentiate between what have been variously called "precarious" and "permanent," "industrial" and "spontaneous," "earned" and "unearned" incomes, — that is, between incomes from present exertion and incomes from property. Furthermore, they desired to make the tax more progressive, either by extending the present system of abatements on small incomes or by adding a super-tax on large incomes. But in order to maintain the income-yielding power of the tax it was necessary to know something about the importance of the various classes of incomes taxed. This was one of the problems canvassed by a special parliamentary committee in 1906.¹ Among the witnesses who gave evidence on this matter were Sir Henry Primrose, Chairman of the Board of Inland Revenue; Mr. Bernard Mallet, a member of the Board; Mr. T. A. Coghlan, formerly Government Statistician for New South Wales; Mr. L. G. Chiozza Money, and Mr. A. L. Bowley. Mr. Mallock uses some of the estimates offered to this committee as his own point of departure.² It will therefore be well to take these estimates into account.

¹ Report from the Select Committee on Income Tax. House of Commons Reports, No. 385 of 1906. This will be cited as "Report."

² Most of these estimates were presented as modifications of the results reached by Mr. Chiozza Money (*Riches and Poverty*, London, 1905), who seems to have suggested some new methods of approaching the problem. The estimates offered by Mr. Money to the Committee are substantially those contained in his book.

British income tax statistics, it is well known, are full of pitfalls for the investigator.¹ The "gross income brought under review" in the year 1904-05 (the year with which Mr. Mallock deals) was about £925,000,000. But the "net income assessed" was less than this by about £200,000,000, which was deducted on account of incomes under the £160 line taxed erroneously through collection at the source, for over-assessments adjusted and for certain non-personal incomes, including those of municipalities, as well as to cover the legal allowances for the upkeep of houses and estates, for the depreciation of machinery, and for life insurance premiums. It is obvious that some of these deductions really represent part of the total net personal money incomes over £160. Such is clearly the case with the amount paid in life insurance premiums. On the other hand, it was suggested by Sir Henry Primrose² that about £50,000,000 more should be deducted to cover income paid to foreigners, undistributed income from the investments of mutual insurance companies, "income" from freehold property occupied by the owner assessed under Schedule A, and certain other items. This seemingly pertinent suggestion is accepted by Mr. Bowley, who, like Sir Henry Primrose, estimates the total income to be dealt with as about £680,000,000. Mr. Money not only does not accept all of these deductions, but adds about £70,000,000 on account of income evading taxation,³ bringing his estimate of the total up to £830,000. Mr. Mallock, in turn, thinks

¹ Some of these difficulties are described in Mr. Bowley's *Elementary Manual of Statistics*, London, 1910, ch. ix, and by Mr. Bernard Mallet in the Appendix to Volume III of *Palgrave's Dictionary of Political Economy*, pp. 748-750. The difficulties are largely due to the method of assessment. But the utility of the statistics would be greatly increased if other than administrative considerations were allowed to influence the form in which they are tabulated.

² Report, p. 8.

³ The estimates of Sir Henry Primrose and Mr. Bowley were made with specific reference to the fiscal problem, and properly include only such income as can be taxed. The amount of evasion is of course absolutely unknown. Mr. Bernard Mallet testified (Report, p. 33), "I have never seen any reliable official estimate of what it comes to." Incomes from foreign investments are known to constitute the most important factor. Cf. W. H. Pries, *The British Income Tax in Recent Years*, *Quarterly Journal of Economics*, vol. xx, pp. 294, 296-299.

that Mr. Money has overestimated the amount of income evading the tax, and furthermore alleges that the profits of farming are underestimated in the assessment, and that the income from estates, buildings, and machinery is understated by reason of an inadequate allowance for depreciation and repairs. His own estimate is £750,000,000.

But for statistical purposes it is also necessary to know the number of persons taxed and the distribution of their incomes, and it is here that the information is most defective, for a very small proportion of the total assessments falls directly on personal incomes. The only direct clue to the problem is furnished by the number of tax abatements on small incomes (from £160 to £700). The gradation of the abatement divides these small incomes into four groups, and the information thus gained would be directly to the point, were it not for two difficulties. In the first place, it cannot be supposed that all the persons entitled to abatements claim them. A marked increase in the number of abatements has followed the increase of the tax rate in recent years,¹ but despite this fact and despite the accompanying growth of a class of professional abatement agents, there must be many persons who, on account of ignorance, inertia, or pride, fail to claim the abatements due them. Both the probabilities of the case and the internal evidence of the statistics indicate that these unclaimed abatements are most numerous in the higher income groups affected, where the amount to be gained through abatement is small.² In the second place, some persons get abatements on that part of their income which is assessed directly, but neglect to claim them on whatever additional income of theirs is taxed at the source. The published statistics are compiled on the assumption that the total amount of abatement granted is divided between a number of tax-payers who get all the abatements to which they are individually entitled.³ For this reason the statistics understate the number of persons actually receiving abatements, and this may

¹ W. H. Price, *loc. cit.*, p. 299.

² For the statistical evidence see the testimony of Mr. Mallet, Report, p. 21.

³ Evidence of Sir Henry Primrose, Report, p. 4.

also be supposed to be more significant for the higher income groups affected, where "additional income" from property must be most frequent.

There were about 700,000 abatements reported for the year considered. To these Mr. Money adds 50,000 on account of the first consideration mentioned, while Sir Henry Primrose adds 80,000 on account of the first consideration and 20,000 on account of the second, reaching a total of 800,000 persons with incomes between £160 and £700. Mr. Bowley, depending partly on another method, places the number at about 830,000. But Mr. Mallock is not satisfied with this. There are, he thinks, at least 930,000 incomes between £160 and £700 assessed under Schedules D and E (professional and business incomes and salaries of government and company officials) alone.¹ The total number in this income group he places at not less than 1,200,000. Even allowing for the indefiniteness of the data, this is a notable departure from the other estimates. If Mr. Mallock is right, unclaimed abatements are much more numerous than had generally been supposed.

The number of abatements throws no light on the distribution of incomes above £700, altho, by subtraction, it may help to determine their total amount. But there are two other classes of statistics which have been pressed into service at this point, — obtained respectively from the operation of the inhabited house duty and of the estate duty. The number and annual values of houses are known for Great Britain, tho not for Ireland. Mr. Money simply assumes, on the basis of common observation, that houses in London worth more than £60 and houses elsewhere worth more than £50 a year will in general be occupied by persons whose income is at least £700. This leads to the inference that there are about 275,000 of these larger incomes.² Of

¹ This estimate includes incomes from individual business ventures, from firms (allowing two and a half persons to a firm), and from very small (presumably "one man") companies.

² The number of houses in Ireland worth over £50 annually is assumed to bear the same ratio to the total amount of income taxed as the corresponding number does in Great Britain. The number thus inferred is so small (9000) that a considerable element of error in the estimate would not appreciably affect the general results.

course many of the wealthier families have both a town house and a country house, and, in some cases, more than one of the latter. On the other hand, flats and tenement buildings are (except in Scotland) counted as single houses. To some extent these factors counterbalance each other, and, in the absence of precise information, Mr. Money ignores them. Sir Henry Primrose thinks that on account of the number of wealthy people living in private hotels and lodging houses and in houses renting for less than the limit suggested by Mr. Money, his estimate is somewhat too small. Mr. Bowley does not use the house duty returns as an essential part of his method. But they are the basis of what is distinctly the most important of Mr. Mallock's arguments in support of his principal thesis that the number of persons enjoying moderate incomes is much larger and is increasing much faster than has generally been supposed. In outline his argument is as follows:¹

There were about 43,000,000 persons and about 8,600,000 houses and residential shops in the United Kingdom in 1905, or about five persons to a house. If we assign the 160,000 houses worth over £60 a year to families with incomes of over £700, the remainder must be distributed among other classes of the population. A rental value of £20 is taken as a fair dividing line between the houses occupied by families who receive more and families who receive less than £160 a year. There were 1,240,000 houses worth between £20 and £60 a year, — a number which is disproportionately large as compared with Mr. Money's estimate of 750,000 incomes in this class, or Mr. Bowley's estimate of 830,000, and which seems to indicate that Mr. Mallock's own estimate of 1,200,000 is not excessive.

No conceivable amount of error in the apportionment of houses to those receiving incomes of over £700 will seriously affect this apparent discrepancy. The crucial point is the validity of the selection of £20 as the lower limit of

¹ Mr. Mallock's argument is worked out in elaborate and tedious detail and involves estimates (necessarily guesses) of the number of houses occupied by each of thirteen different income classes.

annual value. It is easily possible that there are more houses worth £20 a year or over, occupied by families whose aggregate income is less than £160, than there are houses of smaller value occupied by families with larger income. Moreover, the existence of flats, tenements, and double houses worth more than £20 a year must be taken into account. If more of these are occupied by families with less than £160 income than by families with larger incomes Mr. Mallock's conclusion might be seriously affected.

Mr. Mallock endeavors to bolster up this weak spot in his argument by showing that the 7,100,000 houses renting for less than £20 are no more than sufficient for the families having incomes less than £160. But neither the number of families nor the number of incomes in this group is known, and they can only be estimated on the basis of the number of individuals (possibly some 37,000,000) left after the estimated number of persons in families reached by the income tax is subtracted from the total population. The numbers here are so large that Mr. Mallock's estimate is futile. A very slight difference in the assumed average size of family will throw the figures one way or the other. Then there are a host of minor difficulties, such as that occasioned by the transfer of servants from this class to the homes of the richer classes. Mr. Mallock himself suggests that the combined incomes in some artisan families in which there are several wage earners will put such families into the higher income classes, and sometimes into the better houses. But I imagine that the consensus of opinion would be that Mr. Mallock's use of the £20 dividing line is not altogether unreasonable, and that he has suggested a statistical problem that deserves serious consideration.

It is unfortunate that Mr. Mallock has not used his ingenuity on the estate duty statistics. A remarkably constant amount of the total real and personal property of the United Kingdom that is in holdings of over £100 in value passes under review year after year. It is difficult, however, to determine what proportion the estates of decedents make of the total amount of property holdings.

The methods generally used ¹ fail to account for the amount of known income from property, unless a very high rate of interest is assumed. Mr. Bowley, however, makes a novel and fairly successful use of these returns. He disentangles various kinds of income from property from the income tax returns, and compares his results with the corresponding estate duty returns. By assuming an average succession period of 32 years he gets an average interest rate of 5.6 per cent. This interest rate is then applied to the total number of estates, grouped according to size, and the result is an estimate of the amount and distribution of the total income from property. To this is added what taxed income is known to go to individual entrepreneurs, to firms, and to employees of all kinds.² A number of other adjustments and corrections are made, and the results are smoothed by the use of Pareto's income equation.³ He takes pains, however, to adjust his final results to some of the estimates made by Sir Henry Primrose. The equation is found to fit the facts fairly well, except for the very high and the very low incomes.

But it is interesting to note that Mr. Bowley did find it difficult to fit the relatively large number of high incomes indicated by the estate duty returns to the relatively small number of incomes under £700 indicated by the income tax abatements, even as modified in accordance with Sir

¹ Various "multipliers" have been suggested, most of them obtained by variant methods of measuring the average life time of a generation, and running from 30 to 45. But Mr. Bernard Mallet has recently shown, in an admirable piece of analysis (*Journal of the Royal Statistical Society*, vol. lxxi, pp.65-84), that the fact that in general men get richer as they grow older must be taken into account, and that the multiplier that best fits the facts of recent years is 24. This accentuates the difficulty mentioned in the text.

² A firm is counted as two and a half persons. It is assumed "by tradition" that about one-fifth of the income going to individual entrepreneurs and to firms is interest on capital.

³ $\text{Log } n = A - \alpha \log x$, where n is the number of persons whose income is more than x . The coefficient α measures the slope of the straight line which is the graph of the equation, and may be taken as an index of the evenness of the distribution of income. The value of α which Mr. Bowley thinks best fits the British statistics is 1.3, which may be compared with 1.4 for Prussia and 1.5 for Saxony in somewhat earlier years.

Henry Primrose's suggestions.¹ The inference is, I think, that the number of unclaimed abatements must be somewhat larger than had been supposed.² In the accompanying

**ESTIMATES OF THE DISTRIBUTION OF INCOMES IN THE
UNITED KINGDOM IN 1904-1905**

Number of Incomes.	£100-£700	£700-£5,000	£5,000 and over.
Mr. L. G. Chiosza Money .	750,000	235,000	14,250
Sir Henry Primrose	800,000	268,000	12,500
Mr. A. L. Bowley	830,000	155,000	14,600
Mr. W. H. Mallock	1,190,000	159,000	12,000
Amount of Incomes	(£000)	(£000)	(£000)
Mr. L. G. Chiosza Money .	287,400	322,100	181,000
Sir Henry Primrose	255,000	304,000	121,000
Mr. A. L. Bowley	247,000	233,500	200,000
Mr. T. A. Coghlan	229,500	347,000	143,000
Mr. W. H. Mallock	349,000	267,000	133,000

table I have compared some of the estimates made for the Select Committee of 1906 on the Income Tax with Mr. Mallock's figures.³ The divergence of his estimates from the general average will be noted. But all of these estimates are within the bounds of possibility, and to no one of them can be imputed any pre-eminent authority.

Mr. Mallock attempts to differentiate between "earned" and "unearned" income, and here is on familiar ground. He argues forcefully that the higher the rate of return on

¹ That the distribution of abatements, taken by itself, seems to point to a very small number of large incomes had previously been noted by Mr. Edwin Cannan in a review of Mr. Chiosza Money's *Riches and Poverty* (*Economic Journal*, vol. xvi, p. 87).

² Mr. Mallock does not seem to have noticed this possible confirmation of his own views. Another bit of evidence which may be favorable to Mr. Mallock's thesis has come to light. A statute of 1907 permits persons with incomes less than £2000 to claim abatements on so much of this as is "earned." The official statistics embodying the effects of this change have not yet come to hand, but we have Mr. Bowley's statement (*Elementary Manual of Statistics*, p. 181) that the number of abatements claimed is somewhat greater and the income affected somewhat less than would have been inferred from his estimate made for the Select Committee on Income Tax.

³ The estimates were more detailed than is indicated, — that is, incomes were classified in a larger number of groups. The estimates of Mr. Bowley and of Sir Henry Primrose relate only to taxable income.

capital, the larger is the proportion that must be considered earned. If the technical meaning of "earned" and "unearned" is kept in mind, this proposition cannot be lightly dismissed as unsound. Mr. Mallock might have cited J. S. Mill in this connection, had he so desired.¹ He further submits that it is unfair to count income from foreign investments as part of the unearned income, unless the earnings of the labor thus employed in other countries is added to the other side of the British income statement. Even here I think there is something to be said for Mr. Mallock's view, at least as a warning against applying a distinction made for national fiscal purposes directly to the analysis of general social problems.

So far as the unassessed incomes under £160 are concerned, Mr. Mallock simply brings Sir Robert Giffen's estimates for 1886² up to date on the assumption that population and income have increased proportionately throughout the whole range. He neglects the mass of material that has been accumulated in recent years.³ For earlier dates within the nineteenth century the income of the wage-earning classes is estimated on the basis of the investigations of Sir Robert Giffen and Professor Leone Levi,⁴ except for the year 1800, for which Mr. Mallock ventures to construct an estimate of his own on very inadequate foundations. Moreover, the relatively greater importance of agriculture

¹ *Principles of Political Economy*, Book V, ch. II (ed. Ashley, p. 816).

² *General Report on the Wages of the Manual Labor Classes*, Parliamentary Papers, 1893, Vol. LXXXIII, part 2. (c. 6889.)

³ Mr. Mallock's estimate that £1,000,000,000 of unassessed income, or a little over, is annually divided among about 7,500,000 families agrees fairly well with other recent estimates. Just how this income is divided between wage-earners and the recipients of other small incomes (clerks, small shopkeepers, petty officials, etc.) is a question of importance. It is difficult to get at Mr. Mallock's conclusions on this point, largely on account of his annoying practice of giving estimates of the number of persons having a certain "average income," rather than the number included within a certain definite range of incomes. But he seems to have overstated the amount going to manual laborers and to have understated the amount of income going to the other class. The amount and distribution of income (other than wages) below the income tax exemption limit has recently been made the subject of careful study by a committee of the British Association. Their conclusions are given in the *Journal of the Royal Statistical Society*, vol. LXXIV, pp. 37 and ff. (December, 1910.)

⁴ *Wages and Earnings of the Working Classes*, London, 1867.

in the first part of the nineteenth century and the consequently smaller importance of money incomes is not taken into account.

Unfortunately, Mr. Mallock has buried the essential part of his argument in a perfect jungle of estimates and guesses, often irrelevant, and generally unnecessary. This is, I think, partly attributable to a desire to strengthen his conclusions by resting them on results got by a number of parallel methods. His findings from the income tax statistics are fortified, for example, by the use of the house duty returns, as already noted, and also by an examination of the distribution of carriages and of male servants. Mr. Mallock attaches much importance to the fact that he reaches the same result by a number of different methods. But his results are so neatly rounded and the estimates by which he reaches them are so precise and so painfully detailed, that one is led to infer that the one goal has been kept in sight through all the devious marches. It is significant that Mr. Bowley, a practised statistician, frankly admits discrepancies in the data. But Mr. Mallock hammers his reluctant figures into some kind of conformity.

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NOTES AND MEMORANDA

FARMERS' MUTUAL FIRE INSURANCE IN MINNESOTA

FOR several years prior to 1875 a demand on the part of the farmers of the state of Minnesota for a law authorizing and outlining a plan for rural mutual insurance against loss by fire or lightning was making itself felt in the legislature. Several small companies of this nature were already in existence, the two earliest ones of which the writer has any knowledge being organized in 1867. These companies were desirous of legal recognition, and the farmers in various other communities were ready to organize as soon as an opportunity to incorporate on a legal basis had been provided.

To get such a law on the statute books, however, proved no easy matter. That the old line companies were not idle at such a time can readily be imagined. But the most outspoken enemy of the proposed plan was the Insurance Commissioner of the state. In the annual report ¹ of this officer for 1874 we are informed that in the legislative session of the previous year a bill was introduced providing for an "indiscriminate organization of Township Mutual Companies." The bill passed both houses of the legislature, but the signature of the governor, in the words of the Commissioner, "was prudently withheld." He further relates how in the legislature of the year of the report two further attempts were made to pass such a law, the bill in both cases being defeated in the Senate after passage by the House. Despite his warnings and arguments, in the following year, 1875, the legislature passed the

¹ Minnesota Insurance Report, Fire, 1874, p. 53, etc.

act authorizing the formation of Township Mutual Insurance Companies.

The experiment has been highly successful. The report for the year 1885 shows that, during the first ten years that the law was in operation, forty-three Township Mutuals had attained a working basis and were at the time of the report carrying an aggregate risk of over \$8,000,000. According to the report for 1910, there are 149 such companies in the state, with a total membership of 135,382, and with a total insurance on their books of \$254,018,393. By the strictly mutual plan of insurance at cost the farmers of Minnesota are saving themselves in insurance premiums about three quarters of a million dollars annually.

The law of 1875 has been amended from time to time, practically all the changes being in the nature of amplifications of the original provisions. The most thorough revision was undertaken by the Legislature of 1909, at the recommendation of the present Insurance Commissioner. The present law¹ provides that the number of incorporators shall be, as by the original act, twenty-five or more. But the amount of property which these incorporators must possess and offer to insure is raised to \$50,000 as a minimum, instead of \$25,000. The contingencies insured against remain the same, namely, fire or lightning. The incorporators must reside in adjacent towns, and it is further provided that no company shall operate in more than fifty towns at the same time. The certificate of incorporation, which by the statute is carefully outlined as to content, and a copy of the by-laws of the company are required to be filed with the Commissioner of Insurance, after approval and endorsement by him.

The number of directors is left as before, not less than five nor more than nine; but instead of being limited to a one-year term they may be elected for three years or less as the by-laws of the company shall provide. The directors are required to choose from among their number one president, one vice president, and one secretary. They

¹ General Laws of Minnesota, 1909, Chap. 411.

are also required to elect a treasurer who must be a member of the company, but need not be a member of the board unless the directors so desire. The treasurer is required to give bonds in such sum as the directors shall determine. A person owning property within a town in which a township mutual is authorized to operate may become a member of the company and insure his property so located, even tho his place of residence is not within such limits. A member may at any time withdraw from the company by proper notice to the secretary, and the payment of his share of all existing claims.

The kinds of property that may be insured have been enlarged by amendment on several occasions. The present law provides that the following kinds of property may be insured: "dwellings and their contents, farm buildings and their contents, live stock, farm machinery, hay, grain in the bin or stack, churches, school houses, society or town halls, country blacksmith shops and their contents, and the barns and contents used in connection therewith, butter makers' dwelling houses and contents, and barns and contents used in connection therewith." The companies are, as before, prohibited from insuring any property within the limits of any city or village, "except that located upon lands actually used for farming or gardening purposes." The term for which policies may be issued is, as in the original law, limited to five years. A company may take joint or partial risks with other companies, but no company may insure property already insured by another, except with the consent of the former insurer, nor may the total joint insurance exceed in value the sum for which such property is insurable by such former company. In cases of joint insurance, companies are not limited to the territory in which they are regularly authorized to do business. Classification of property is permitted, as to degree of risk.

Before issuing a policy the company is required to collect "regular cash premium and policy fee and take the written agreement of the insured . . . to pay pro rata share of all losses sustained by the company." The amount of such

cash premium is left to be determined by each organization for itself. To make doubly sure that assessments are collectible the act specifically states that suits at law may be brought against any member refusing or neglecting to pay such assessment. It is further provided that in case the directors wilfully neglect or refuse to perform the duties of their office in connection with a loss, they become, as under the original law, liable in their individual capacity to the person having the claim against the company.

All losses are required to be properly reported to the secretary, and if the claim involved exceeds \$300, the directors are required to appoint a committee of three members of whom the secretary shall be one. This committee has the power of examining witnesses and the secretary is authorized to administer oaths, in determining the amount of the loss. The by-laws, however, may provide that the secretary shall himself determine losses, and even without such provision, he and the president, or either of them, may pass upon all claims of \$300 or less. In case of failure to reach a satisfactory settlement under any of these provisions, the law requires that the matter shall be referred to an arbitration board, consisting of three disinterested men, one of whom is to be chosen by the company, one by the insured, and a third by the two so chosen. The award of a majority of these three is declared to be final unless an appeal be made to the courts. Such action by an arbitration board, however, is required, unless waived by mutual agreement, before action in court is permitted. The referees or arbitrators are allowed \$2.00 per day and a 5c. mileage. These charges, together with witness fees, if any, must be paid by the company if the award is higher than the sum offered by the officers or the original committee of the organization; if the award is not so increased, these expenses are borne by the claimant.

A company instead of waiting for a loss to occur may collect and maintain in its treasury a sum not to exceed two mills on each dollar insurance in force, or it may, after a loss has occurred, borrow a sum not to exceed the per-

centage above mentioned, and thus postpone an assessment. Funds in the treasury of the company may, with the authority of the directors, be loaned by the treasurer on first real estate securities, or upon similar authorization they may be deposited by him in banks approved by the directors.

The average amount of risk on the books of each of the 149 companies is a little over \$1,700,000. There are 59 companies having a total insurance in force of less than \$1,000,000. Many of these, of course, are but recently organized and have not had time to attain normal proportions. Forty-nine companies have each between one and two million dollars insurance in force; seventeen have between two and three million; twelve have between three and four million; eight have between four and five million, and four companies have each over five million.

No company, it will be recalled, is permitted to operate in more than 50 townships at the same time. Only one company has reached the legal limit in this respect. Three other companies operate in more than forty townships. Twelve companies operate in thirty or more but less than forty townships; thirty-six companies in twenty or more but less than thirty; sixty-five in ten or more but less than twenty; and thirty-two in less than ten townships. Thus it is seen that ninety-seven, or almost two-thirds of the companies, limit their respective fields of operation to less than twenty townships, while only sixteen, or one-tenth of the companies, operate in thirty or more townships each. It would appear from these figures, as well as from other computations that may be made, that the favorite area for a company to take in as business territory is fifteen to twenty townships. The largest company operates in but twenty-one townships. Two of the other companies having a business in excess of \$5,000,000 operate in twenty townships each, while the fourth company in the same class operates in thirty-six such units of area. No company operates in less than two townships, and but one company is confined to two. There are but five companies, all told, restricted to less than five townships each. Fifty-six of

the companies have their territories all in the same county, and, strangely enough, three of these are in the "five million" group. Thirty-four companies have their territory in two counties; thirty-five in three counties; eighteen in four counties, and six in five counties. Whether or not the townships in which a company by its charter is allowed to do business are within the limits of one or more counties will depend, of course, very largely upon the domicile of the company with reference to county lines.

It cannot be doubted that difference of nationality and even church affiliations have played a considerable part in forming the boundaries of many of the companies. Happily, this tendency seems to be rapidly waning as Minnesota citizens from different parts of the country, and more especially from different foreign countries, learn to understand one another through the use of a common language and the discovery of common interests. No more striking example of this process could well be given than the history of one of these insurance companies formed by a colony of foreign-born citizens before the law of 1875 gave legal sanction to such an organization. As first organized, membership was restricted both by nationality and church. Within a year both qualifications were partially removed, tho the changed name was still written in the foreign language of the founders. Four years later the organization became a "Farmers' Mutual Insurance Club" and today, under the name of the township of its official domicile, it is one of the 149 companies we are discussing.

The companies have doubtless done much to create among the farmers of Minnesota a feeling of fellowship and a community of interest. This is stimulated by the annual and other local meetings of the membership of each individual company, and by an annual gathering of representatives organized in a state association. The fifteenth annual meeting of the association was held at St. Paul on the twelfth and thirteenth of last January. Sixty-two companies were represented. Some of the topics discussed were blanks, books and bookkeeping, proper

initial premium rates, proper amount of reserve funds and the disposal of these until needed, classification of risks, and proper valuation of high-priced stock on the farm. In the discussion of reserve funds, for instance, it was shown that a decided saving could be accomplished by charging a large enough premium upon the issuing of a policy to avoid making an assessment except upon extraordinary occasions. The practice in this respect is at present, however, very divergent. Initial premiums vary in different companies from ten cents per hundred dollars to seventy-five cents, for a five-year policy. Experience shows that by charging the latter figure, assessments, each of which cost an average company some \$200 or \$300, can be almost entirely avoided. A majority of the members present favored a reserve of something over \$1,000 for a company having about \$1,000,000 insurance in force, the percentage of reserve decreasing as the company's insurance in force exceeded that amount. Such discussions are of great value to men who, with all their sturdy virtues, are often deficient in knowledge of the corporate way of doing things, and of business methods and accounts.

The moral hazard, from the very nature of an organization with neighborhood control, is less than with stock companies, or even with mutual companies doing a more general business. It is further reduced by the practice of refusing to insure for more than two-thirds or at most three-fourths of the actual value of the property. The similarity of the risks of these companies, and the knowledge of neighbors as to the condition and value of the property of an applicant for insurance make it possible to apply this rule without difficulty. Commissioner Elmer H. Dearth, in his report for the year 1901, makes the rather sweeping assertion¹ that the township mutuals have entirely eliminated the moral hazard, and finds the cause in the fact that each member feels himself part and parcel of the company.

In addition to eliminating the moral hazard, or at least in greatly reducing it, the companies have accomplished

¹ Minnesota Insurance Report, Fire, 1901, p. xxii.

something in the way of reducing the number of accidental fires. Most of their by-laws contain numerous precautions which must be observed by the insured. Among these are the placing of all hay or straw stacks beyond a specified distance from any building wherein fire is used, always having on hand certain fire fighting apparatus, such as water pails, a ladder of sufficient height, and other appliance by which the ridge of the roof may be reached, etc. Stove pipes and chimneys are required to be in good repair and proper non-conducting thimbles used where pipes pass through partitions, ceilings, or roof. Endangering buildings by the careless disposal of hot ashes is usually provided against. If these precautions are not observed, then, in the words of the by-laws of one of these companies, "the insured shall not be entitled to any insurance to the extent that such loss or damage has been caused or increased by such violations." In securing the observance of these precautions, as in guarding against over-insurance and the consequent moral hazard, these local and consciously mutual organizations have a decided advantage over the larger and more complex old line companies.

In the thirty-five years since the beginning of the movement, not a single company has failed to meet its obligations. Two partially organized companies, it is true, failed to enter on business; but every company fully organized has been a success. Commissioner Dearth, speaking before the National Association of Coöperative Insurance Companies which met at St. Paul in 1902, after pointing out the remarkable success of the Township Mutuals of Minnesota, pays them the following tribute: "These companies deserve the greatest consideration, not only for the very large policy or membership, but on account of the thoroly earnest, conscientious, and conservative management which has been a marked characteristic of their business transactions." He calculates that the average cost of insurance to the farmers in their own companies, about seventeen cents per hundred — thirteen cents of which covers losses and four cents expenses, — is about one-fifth what it would

have cost them in old line companies, and that the Township Mutuals saved the farmers of the state in the year 1901 alone \$1,069,000, and up to that date had saved a total sum of not less than \$12,000,000. "Old line joint stock companies," he asserts, "find it unprofitable to carry these risks even at a rate of seventy-five cents or a dollar, and such as had a farm department formerly are withdrawing from the field." The last part of this statement is borne out by an inquiry as to the number of stock companies represented by the leading local fire insurance agencies who at present insure farm property. It would seem, however, that in estimating the difference in cost to the farmers under the two plans, the Commissioner has used the one year rate for the stock companies, instead of one-third of their three years' rate, which would more accurately represent true cost to the insured; it being the established rule to give three years' protection at twice the annual rate.

The actual amount that the Township Mutuals are saving the farmers annually is perhaps impossible to estimate, since no one can say just to what extent the present rates quoted by stock companies—in so far as they still offer rates—have been influenced. Taking their rates as quoted at the present time, the annual saving, tho not so great as might be inferred from the figures of Commissioner Dearth, is still very considerable. The present rate by such stock companies as take farm risks varies from sixty-five cents per hundred for one year and \$1.25 for three years, to seventy-five cents for one year and \$1.50 for three. The higher rates are applied to the more sparsely as well as more newly settled northern parts of the state. Under the three-year plan, the average annual cost to farmers insuring in stock companies would be about a third of \$1.375, or forty-six cents per hundred. The average cost in the Township Mutuals is about seventeen cents per hundred,—an annual saving of twenty-nine cents per hundred of insurance. At this rate, with over \$254,000,000 insurance in force, the Township Mutual companies

saved the farmers of the state in the year 1909 about \$750,000. The total savings during the third of a century that the system has been in operation would amount to more than ten million dollars. Were we to allow for the effect of competition in reducing the rate of the old line companies, and for compound interest on the premium charges saved from year to year, these figures would probably be doubled.

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THE POSITION OF INCOME BONDS, AS ILLUSTRATED BY THOSE OF THE CENTRAL OF GEORGIA RAILWAY

INCOME bonds have owed their existence to periods of financial embarrassment. During the long series of successive railway reorganizations which culminated in the nineties, the purpose of every endeavor which looked toward the rehabilitation of a bankrupt property was to decrease the immediate fixed charges. This was accomplished usually by compelling the holders of junior mortgages to accept obligations which involved no fixed rate of interest and no foreclosure rights because of default in interest payments. Interest or dividend on this new class of securities would be paid only if earned. Assessments on stock and consolidated mortgages were funded by the issuance of the same kind of security. This whole method of financing involved the formation of a new class of securities intermediate in character between the prior lien bonds and the common stock. It also involved the entire readjustment in the kind of securities represented in the liability account, with usually an increase in the par value of the junior issues and a slight but not corresponding decrease in the interest-bearing bonds. As a result of this shifting the majority of railway companies emerged from reorganiza-

tions burdened by an increase in capitalization, but with a lightened load of obligatory fixed charges. Reorganizations acted as a drug to tide over a period of weakness, — the future was mortgaged to satisfy the present.

This new class of securities, involving no fixed charges yet having a claim to earnings prior to the common stock, was usually represented by income bonds¹ or preferred shares of stock. The latter involve little that is of interest to us. Income bonds, on the contrary, present a puzzling chapter in railway finance marked by economic blunders and court litigations. It is now happily drawing to a close, as few income bonds have been issued of recent years.² Stripped of its technicalities an income bond was merely an obligation having a fixed date of maturity, but having a claim to interest only if the net earnings of the company were sufficient to warrant its payment. Its ostensible purpose was to give the creditor of the company a bond with all that this magic name implies; its real purpose was to create a kind of security which should not involve fixed charges, like an ordinary bond, nor voting power, like ordinary stock. It was a clumsy³ endeavor to make a man at once both creditor and partner without giving him the rights of either.

It is true that legally the income bond holders come into possession of the net income as soon as earned,⁴ whereas the mortgage bond holder has no right to the actual income unless he takes possession of the property by foreclosure.⁵

¹ At time of reorganization the courts consider income bonds a better security than stock, *Hancock v. Toledo, etc. R.R. Co.*, 9 Fed. Rep. 738.

² The general bonds of the Cin. Ham. and Day., 1939, are an unfortunate exception. In all the railway securities of the country I am able now (Dec., 1910) to find but eleven separate issues of income bonds outstanding. Some of these are held by controlling companies and hence are not likely to occasion court litigation. Some are the obligations of railroads which have long since become dividend-paying roads. The issues that are now likely to cause dispute are very few in number.

³ Gowen's "deferred income bonds" of the Philadelphia and Reading (1880) were actually to come after the common stock, — this latter being then quoted at 15 on the market.

⁴ *Galena and Chicago R.R. Co. v. Menzie*, 26 Ill. 121.

⁵ *Am. Bridge Co. v. Heidelbach*, 94 U. S. 798.

Yet this advantage is fictitious, as the company would, of course, pay the mortgage bond interest to prevent the foreclosure long before it considered the claims of the income bond holders. These latter claims, it will be observed, are based on economic rather than legal considerations, for they depend at the last analysis on the ability of the traffic to create actual net earnings. Net earnings have been defined, perhaps once for all, by the United States Supreme Court in the famous suit between the Government and the Union Pacific Railroad in 1878. "Net earnings are the excess of the gross earnings over the expenditures defrayed in producing them, aside from, and exclusive of, the expenditure of capital laid out in constructing and equipping the works themselves. Theoretically, the expenses chargeable to earnings include the general expenses of keeping up the organization of the company, and all expenses incurred in operating the works and keeping them in good condition and repair; whilst expenses chargeable to capital include those which are incurred in the original construction of the works, and in the subsequent enlargement and improvement thereof."¹ The whole problem as to whether or not the interest on the income bonds shall be paid narrows itself to one of bookkeeping, to an adjustment between the charges applicable to capital and income accounts.

The problem becomes the more clear cut when the stockholders and the income bond holders are different parties, since it is obviously to the advantage of the former to make a liberal allowance for maintenance and for the latter to reduce maintenance to a minimum so that net earnings shall be swelled. This is well illustrated by the recent history of the Central of Georgia Railway, leading up to a late decision by the Supreme Court of Georgia.

The present Central of Georgia Railway is the successor, after a reorganization in 1895, of the old Central of Georgia Railroad. This older company and its forebears had paid dividends almost continuously from 1840 to 1888. In this latter year its misfortunes began. A group of financiers

¹ *Union Pac. R.R. Co. v. U. S.*, 99 U. S. 420.

had acquired a majority interest in the Central and by considerable manipulation had saddled this on the old Richmond Terminal Company, the predecessor of the Southern Railway. The arrangement portended good for neither company. The Central tried to continue paying 8 per cent on its stock without allowing proper maintenance charges; the Terminal Company became involved in a bitter internal strife from which it was extricated only through the reorganization proceedings of Mr. Morgan. The Central of Georgia defaulted on its interest payments and finally, in 1895, emerged from the reorganization with its nominal capital increased from thirty to fifty millions.

These new capitalization items are of importance as they throw light upon the present controversy over the income bonds. Thus in a corporation whose nominal

Bonds

Prior Lien First Mortgage	1,840,000	
General First Mortgage	7,000,000	
Consolidated Mortgage	16,500,000	\$25,340,000

Income Bonds:

First Preference	4,000,000	
Second Preference	7,000,000	
Third Preference	4,000,000	15,000,000
<i>Collateral Trust Bonds</i> ¹		4,880,000
<i>Common Stock</i>		<u>5,000,000</u>
		\$50,220,000

capital is over fifty million the control is vested in five millions of stock. Altho this stock has been closely held since the reorganization, some idea of its probable value may be gained from the fact that the third preference bonds which come before it sold for four and a half (\$45 for a \$1000 bond) as recently as 1900, or five years after the reorganization. That the preference bond holders held "bonds" and could not therefore vote compensated perhaps for the bond character of their security.

¹ Secured mainly by deposit of 19,950 shares of Ocean Steamship Co. stock, inventoried at \$250 per share.

At all events these preference bonds were, in the reorganization, given for actual funded obligations, — in some cases first mortgage, prior liens on branch lines. That the prior lien bond holders would accede to these conditions shows the hopeless condition into which the finances of the old Central Railroad had descended just before the reorganization.

It is not my purpose to go into the details of the Central of Georgia subsequent to its reorganization.¹ Suffice it to say that conditions so improved that by 1905 and 1906 the full five per cent on all three issues of the income

	1896	1897	1898	1899	1900	1901	1902	1903
1st	1½ —	2½ —	2 39	2 37	3½ 47	5 72	3 80	5 70
2d	0 —	0 —	0 13	0 12	0 14	0 28	0 38	0 31
3d	0 —	0 —	0 7	0 6	0 7	0 15	0 25	0 22
	1904	1905	1906	1907	1908	1909	1910	
1st	5 80	5 95	5 94	5 75	0 68	0 85	0 96	
2d	5 53	5 77	5 84	3.7 60	0 68	0 74	0 94	
3d	0 41	5 67	5 78	0 50	0 54	0 70	0 93	

preference bonds was paid. Dividends on the income bonds for the fiscal year ending June 30, 1907, were due October 1st of the calendar year. During the summer rumors became current that refunding of the income bonds to a four per cent basis was contemplated, but conferences between directors and income bond holders availed nothing. At the same time the management gave out interviews to the effect that heavy maintenance charges and reduced traffic had seriously endangered the surplus of net earnings available for the income bond holders. Finally, on August 24, 1907, the directors declared five per cent on the first incomes, 3.729% on the second incomes, and nothing on the third. So adroit indeed was the bookkeeping that out of a total of over twelve millions gross earnings the manage-

¹ The following table gives the interest paid on the income bonds and the approximate average yearly price since they were actively dealt in on the N. Y. Exchange. The first figure in each case states the rate of interest, the second, the average market price.

ment carried to balance, after paying the 3.729% on the second incomes, just \$32.95.¹ Five days later, on the 29th, a protective committee of the second and third income bond holders was arranged. On February 10th following, the Central Trust Company of New York as trustee for these bond holders filed a suit in their interest on the ground of concealed earnings.² On May 31, 1909, Colonel William Garrard returned an account to the court sustaining the contention of the Trust Company and the bond holders.³ This finding was afterwards sustained by the Superior⁴ and Supreme Courts⁵ of the State.

To understand the true nature of the issue we must penetrate behind the screen of court proceedings and see who were actually the parties concerned. The issue was between the income bond holders, or the public, and the small number of stockholders. Who were these? At the time of the reorganization of the Central of Georgia in 1895 this almost worthless common stock was created⁶ in favor of interests allied with the Richmond Terminal Reorganization Committee. To give this "*aqua pura*" any kind of value the railroad property must be built up. And as the interest on the income bonds was non-cumulative, "conservative" management demanded liberal expenditures for maintenance. In the spring of 1907 the Terminal reorganization interests sold this Central of Georgia stock to Messrs. Thorne and Perry. In November of the same year these gentlemen transferred the stock to E. H. Harriman who later, in 1908, conveyed it to the Illinois Central. Obviously it was for the interest of the Thorne-Harriman-Illinois Central group to make heavy expenditures on the property, so that the railway, the actual title of which

¹ Twelfth An. Report (1907) of Cen. of Geo. R'y Co., p. 3. The total net earnings available to the three classes of income bond holders was \$461,030.

² Commercial and Financial Chronicle, 86, 419.

³ Ibid., 88, 1436.

⁴ Ibid., 89, 592.

⁵ Dec. 14, 1910.

⁶ The old Railroad stock was exchanged for third preference income bonds at the time of reorganization.

rested in the stockholders, should be improved; obviously it was for the interests of the income bond holders to have some of the net earnings deflected to their pockets even tho improvements waited.

The whole issue between the two parties turned on the question of concealed net earnings and upon the logical and legal distinction between income and capital accounts. Two main contentions were advanced by the bond holders, — a subsidiary steamship company had earnings in its treasury which should have been paid over to the railway company, and, secondly, the railway's own charges for maintenance were excessive. Let us examine the grounds for these two contentions.

At the time of the reorganization of the railroad the new company took over as part of the assets 19,950 out of 20,000 shares in the Ocean Steamship Company, which maintains regular service from Savannah to Philadelphia, New York, and Boston. This company owns valuable terminals at Savannah and Hoboken and had always done, as far as known, a very profitable business. As far back as 1888 it had contributed over one-sixth to the net earnings of the railroad. Since 1900 the steamship company has published no full report altho making heavy purchases of steamships for capital account out of earnings.¹ Now it is obvious that new and improved steamships are more than mere maintenance and this the court has expressly asserted.² Yet no accounting³ of earnings was made to the railway, even tho the railway was carrying the interest on its five per cent collateral trust bonds issued against the steamship stock. This interest alone would have gone a great way toward the payment of the income bond holders' claim. A local Savannah paper estimated the steamship company's earnings for the year to be \$720,000.⁴

¹ See especially the 11th (1906) and 12th (1907) An. Reports, Cen. Geo. R'y Co.

² *Mackintosh v. Flint and Pere Marq. R. R. Co.*, 34 Fed. 609.

³ A railroad cannot merely estimate depreciation unless an account is kept for all the parties interested, *U. S. v. Kan. Pac. R'y Co.*, 99 U. S. 459.

⁴ *Commercial and Financial Chronicle*, 85, 529.

This may have been excessive, altho the recent accounting to the court places the earnings at about \$540,000.

The second contention of the bond holders concerned maintenance charges. During the year 1907 the Central of Georgia had gross earnings of twelve million, — \$6316 per mile, of which it spent about \$2002 per mile for maintenance. The ratio is 31.54%. For the ten-year period the ratio was practically identical, — 31.52%. Was this excessive? The average maintenance percentage for the great trunk lines was for the last decade almost exactly twenty-five per cent.¹ Yet it may be contended that the conditions are different in the south. Comparing the maintenance percentage of the Central of Georgia

Road	Total Gross Receipts	Maintenance	Percentage of Maintenance to Gross Receipts	Road	Total Gross Receipts	Maintenance	Percentage of Maintenance to Gross Receipts
Atchison . .	\$8,480	\$3,379	28%	Gt. No. . .	\$7,921	\$1,786	22%
B. and O. . .	17,500	4,570	26%	L. Valley . .	23,000	6,319	28%
C. P.	6,279	1,893	30%	M. K. and T.	7,100	1,800	25%
C. and O. . .	12,170	3,601	29%	Mo. P. . . .	7,235	2,000	27%
St. Paul . .	7,460	1,689	23%	N. Y. Central	24,318	5,800	23%
North W. . .	8,434	1,941	23%	N. Haven . .	25,248	5,371	21%
D. & H. . . .	22,539	4,032	18%	No. Pacific .	9,950	2,260	23%
D. and Rio G.	7,624	1,858	24%	Penn.	35,500	9,400	26%
Erie	20,920	5,502	26%	So. Pacific .	10,600	2,780	26%
					Average		25%

with that of other southern roads it again seems as if the charges of the Central were excessive. This table, on a

	Atlanta Birm. and Atlantic 1907 10 yrs ^a	Atlantic Coast Line 1907 10 yrs	Seaboard Air Line 1907 10 yrs	Atlanta West Point 1907 10 yrs	Southern 1907 10 yrs
Gross . .	\$4,081 —	\$6,158 \$5,226	\$6,352 \$5,310	\$13,600 \$10,700	\$7,700 \$6,584
Maint . .	1,138 —	1,806 1,403	1,732 1,386	3,764 3,183	2,284 1,884
Percent .	28% —	29% 27%	27% 26%	28% 29%	30% 29%

¹ I have computed the maintenance charges (per mile) for the following systems for the period 1899–1909.

^a The ten-year interval is from June 30, 1899, to June 30, 1909.

mileage basis, shows clearly, then, that both for the year in question and for the whole decade the Central of Georgia was expending a larger percentage for maintenance than roads having a similar location and similar traffic. A large proportion of this was for improved rails, but these cannot be charged to net earnings.¹ In the present case the court concluded that \$240,000 of net income had been spent for capital account.

It will be remembered that the Thorne-Harriman interests, which controlled the five million common stock in 1907, admitted a net income of \$461,030 from which they paid the five per cent on the first income and the 3.729% on the second income bonds. To this sum the court further added the amounts just mentioned, together with some smaller items, as net income falsely charged to capital. As a result the bookkeeping surplus of \$32.95 was changed to an actual surplus of \$591,934, after paying the full five per cent to all the income bond holders. This was 11.4% on the five million of capital stock.

<i>Railroad:</i>	Available		\$461,030
<i>Court:</i>	Ocean Steamship Co. net . . .	\$542,399	
	Lumber Reserve ²	100,000	
	Maintenance	240,110	
	Minor Items	81,223	
		<hr/>	
		963,732	
	Clerical Error ³	102,828	860,904
		<hr/>	
	Total Available		\$1,321,934
	1st, 2d, and 3d Income Bonds		750,000
	Surplus		\$ 571,934
	On \$5,000,000 stock		11.4%

This decision by the Supreme Court of the state gives a clear expression to the legal rights of income bond holders. Reports of subsidiary companies kept back, excessive

¹ *Mackintosh v. Flint and Pere Marq. R. R. Co.*, 34 Fed. 608.

² Excessive reserve for unadjusted freight claims on timber.

³ Clerical bookkeeping errors in favor of company.

reserves for unpaid claims, "liberal" maintenance charges cannot be used to efface net earnings. It brings again to the foreground the definition of the United States Supreme Court as to what constitutes net earnings.

The whole controversy also helps to bring to an end the already closing chapter of income bonds in our financial history. Planned originally to meet a pressing need, they failed when brought to simple tests. They have proved undesirable from the point of view of the investor because he is not a true creditor in the ordinary sense that a bond holder is, yet at the same time he has no voting power such as that exercised by the stockholder. His interests are in continual conflict with those of the other security holders. The income bonds have also proved undesirable from the point of view of the road, and for the following reasons. (1) The continual dispute between the management and the income bond holders disturbs any possible harmony of interests and management. (2) This dispute injures the general credit of the road. If the income bond holders have their way, it becomes difficult to build up the road by liberal maintenance appropriations and as far as capital expenditures is concerned the road finds it difficult to persuade the income bond holders to allow the directors to issue new mortgage or debenture bonds which shall have a prior claim on the earnings, — thereby any legitimate expansion and improvement of the road is hampered. (3) And lastly, the presence of income bonds is now accepted as a confession of financial weakness at some time in the immediate past.

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BOOKS RECEIVED

- Allard, P. *Los esclavos cristianos desde los primeros tiempos de la iglesia hasta el oaso de la dominación romana en occidente.* Madrid: Saturnino Colleja Fernández. 1910. pp. 413. 4 pesetas.
- Angell, N. *The Great Illusion: A Study of the Relations of Military Power in Nations to their Economic and Social Advantage.* New York: G. P. Putnam's. 1910. pp. 388. \$1.50.
- Biach, R. *Thomas Mun: Englands Schatz durch den Aussenhandel.* [Translation of Mun into German, with introductory note of 100 pages.] Vienna: F. Tempsky. 1911. pp. 211.
- Bourdeau, J. *Entre Deux Servitudes.* Paris: F. Alcan. 1910. pp. 342. 3 fr. 50c.
- Bryce, J. *The American Commonwealth.* New York: Macmillan. 1910. pp. 962. \$4.00. (New Edition. Completely revised throughout, with additional chapters.)
- Cunningham, A. *British Credit in the Last Napoleonic War.* Cambridge: Cambridge University Press. 1910. pp. 146. 2s. (Girton College Studies, No. 2.)
- De Lestrade, C. *La vie Internationale.* Paris: Victor Lecoffre. 1911. pp. 187. 2 fr. (Bibliothèque d'Economie Sociale.)
- Eliot, C. W. *The Conflict between Individualism and Collectivism in a Democracy.* New York: Scribner's. 1910. pp. 135. \$.90.
- Ferrand, L. *L'Habitation ouvrière et à bon Marché.* Paris: Lecoffre. 1911. pp. 211. 2 fr.
- Gettell, R. C. *Introduction to Political Science.* Boston: Ginn & Co. 1910. pp. 421. \$2.00.
- Giesecke, A. A. *American Commercial Legislation before 1789.* Philadelphia: University of Pennsylvania (D. Appleton & Co.). 1910. pp. 167. \$1.50.
- Hale, E. E. and Brewer, D. J. *Mohonk Addresses.* Boston: Ginn & Co. 1910. pp. 150. \$1.00. (International School of Peace.)
- Hart, H. H. *Preventive Treatment of Neglected Children.* New York: Charities Publication Committee. 1910. pp. 419. (Correction and Prevention, IV.)
- Henderson, C. R. (Ed.) and others. *Prison Reform.* Smith, E. *Criminal Law in the United States.* New York: Charities Publication Committee. 1910. pp. 287. (Correction and Prevention, I.)
- Henderson, C. R. (Ed.). *Penal and Reformatory Institutions.* New York: Charities Publication Committee. 1910. pp. 345. (Correction and Prevention, II.)
- Henderson, C. R. *Preventive Agencies and Methods.* New York: Charities Publication Committee. 1910. pp. 439. (Correction and Prevention, III.)
- Herbert, Cl.-J. *Essai sur la Police Générale des Grains sur leurs Prix et sur les Effets de l'Agriculture, 1755.* Paris: Geuthner. 1910. pp. 166. (Collection des Economistes et des Réformateurs Sociaux de France, 5.)
- Judson, H. P. *The Higher Education as a Training for Business.* Chicago: University of Chicago. 1910. pp. 54. \$.50.

- Keith, Theodore. *Commercial Relations of England and Scotland 1603-1707*. Cambridge: Cambridge University Press. 1910. pp. 210. 2s. (Girton College Studies, No. 2.)
- Kennan, K. K. *Income Taxation. Methods and Results in Various Countries*. Milwaukee: Burdick & Allen. 1910. pp. 347. \$3.50.
- Le Rossignol, J. E., and Stewart, W. D. *State Socialism in New Zealand*. New York: T. Y. Crowell. 1910. pp. 311. \$1.50. (Library of Economics and Politics.)
- Lescine, L., and Saret, L. *Introduction mathématique à l'étude de l'Economie politique*. Paris: F. Alcan. 1911. pp. 191. 3 fr.
- Mallock, W. H. *The Nation as a Business Firm. An attempt to cut a path through jungle*. London: A. and C. Black. 1910. pp. 268.
- Marion, Marcel. *Les Impôts Directs sous l'Ancien Régime principalement au XVIII^e Siècle*. Paris: E. Cornély. 1910. pp. 434. 12 fr.
- Mason, F. R. *The American Silk Industry and the Tariff*. Cambridge: American Economic Association. 1910. pp. 182. \$1.00.
- Mills, J. S. *England's Foundation: Agriculture and the State*. London: P. S. King. 1911. pp. 93. 1s.
- Morelly. *Code de la Nature ou le Véritable Esprit de ses Loix, 1755*. Paris: Geuthner. 1910. pp. 119. (Collection des Economistes et des Réformateurs Sociaux de la France, 4.)
- Nearing, S. *Social Adjustment*. New York: Macmillan. 1911. pp. 377. \$1.50.
- Nouel, R. *Les Sociétés par Actions. La réforme*. Paris: F. Alcan. 1911. pp. 332. 3 fr. 50c.
- Ralston, J. H. *International Arbitral Law and Procedure*. Boston: Ginn & Co. 1910. pp. 352. \$2.00. (International School of Peace.)
- Robinson, E. V. *Commercial Geography*. Chicago: Rand, McNally. 1910. pp. 503.
- Singewald, Karl. *The Doctrine of Non-Suability of the State in the United States*. Baltimore: Johns Hopkins Press. 1910. pp. 117. (Johns Hopkins University Studies, Series XXVIII, No. 3.)
- Small, A. W. *The Meaning of Social Science*. Chicago: University of Chicago Press. 1910. pp. 309. \$1.50.
- Vandervelde, E. *La Belgique et le Congo. Le Passé, le Présent, l'Avenir*. Paris: F. Alcan. 1911. pp. 272. 6 fr.
- Vrooman, C. S. *American Railway Problems in the Light of European Experience, or Government Regulation vs. Government Operation of Railways*. London: Henry Frowde. 1910. pp. 376. 6s.
- Weale, B. L. P. *The Conflict of Colour. The Threatened Upheaval Throughout the World*. New York: Macmillan. 1910. pp. 341. \$2.00.
- Weber, Adolf. *Der Kampf Zwischen Kapital und Arbeit*. Tübingen: J. C. B. Mohr. 1910. pp. 579. M. 12.
- Wenlense, G. *Le Mouvement Physiocratique en France de 1756 à 1770*. 2 vols. Paris: F. Alcan. 1910. pp. 1385. 25 fr.
- *Les Manuscrits Economiques de François Quesnay et du Marquis de Mirabeau aux Archives Nationales. Inventaire, Extraits, et Notes*. Paris: Geuthner. 1910. pp. 150.

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SOME LIMITATIONS OF THE VALUE
CONCEPT

SUMMARY

"Exchange value" compared with the abstractions of physical science, 410. — Subordination of price to value in economic theory, 413. — A general medium of exchange implicit in the theory of exchange value, 416. — Value as imputed price, 419. — Methods of imputation, 421. — Imputation of value extended to goods not priced in the market, 423. — The value of a stock depends on the size and nature of the units chosen, 425. — Meaning of "national wealth," 427.

Ever since the publication of "The Wealth of Nations" the notion of exchange value has remained the most fundamental and possibly the most consistently defined concept of economic science. Bickerings as to whether "power in exchange," "quantity received in exchange," or "ratio of exchange" best expresses this concept, as to whether exchange value is a quantitatively variable attribute or quality of a commodity or merely a disembodied ratio, have not been taken as seriously affecting the precision of the concept. It is possible that these differences, if consistently followed out, might have led to perceptible differences

in doctrine at various points.¹ But as it is, the essential points at issue between the advocates of conflicting economic theories have been born of other things than variant notions of the meaning of exchange value. Historically, if not logically, the differences alluded to have been verbal ones. It is not my purpose in the present paper to attempt the difficult and unprofitable task of suggesting any revision in an elementary concept which has worn well in actual service. I shall venture, however, to suggest certain limitations implicit in the value concept as commonly formulated. Failure to take account of these limitations has led to weaknesses in certain parts of the superstructure of theory that has been erected on the foundation of the theory of value.

I

The notion of exchange value is an abstraction. This much will be easily conceded, especially when the concept is carefully cleared of all entanglement with the really simpler concept of subjective value. As an abstraction it presents some superficial resemblance to such concepts of physical science as mass, extension, energy, and the like. Analogies based on this resemblance have been used freely in expositions of economic theory, especially in discussions of the "measure of

¹ It may be noted that these differences have an important bearing on the problem of the measurement of changes in the general level of prices. That Jevons's explanation of the grounds of his choice of the geometric average for this purpose is hazy has come to be a generally accepted statement. But in fact the matter seems to be rather simple. Jevons, like Cournot (*Mathematical Principles of the Theory of Wealth*, Eng. transl., ch. II), came naturally and unhesitatingly to the conclusion that changes in prices are only changes in ratios, and hence should be averaged geometrically. Later, the criticisms of Laspeyres suggested to him that a change in the value of gold is, after all, a change in its purchasing power, and that the arithmetic average had therefore some claim to consideration. Jevons continued to defend the use of the geometric average (for his purposes) but his former unquestioning confidence in it was gone. Compare his *Investigations in Currency and Finance*, new edition (1909), pp. 19-21 and 113-115.

value." Like value, these physical concepts are, in a quantitative sense, purely relative, — that is, mass, extension, or energy cannot be measured except in terms of units of mass, extension, or energy.

Moreover, they too are abstractions, — properties or qualities of things, detached by analysis from the synthetic ideas given directly by human experience. This process of abstraction makes it possible and legitimate to neglect the other manifold and differing properties of things, and to conceive of the existing world in terms of mass, volume, or potential energy. The method of abstraction has made it possible for science to find order and simplicity in an apparently complex universe. Furthermore, abstractions enter largely into all thinking which deals with general principles. These commonplaces of logic are rehearsed lest the trend of the present discussion should be taken to involve a general and necessarily futile argument against the use of abstractions in economic theory. The difficulties to be suggested spring from the fact that, as compared with the superficially analogous concepts of physical science, "exchange value" is an abstraction of a higher order and of a thinner sort.

The concrete facts in the case are the exchanges of goods and services for money and money substitutes. Prices, not values, are the primary elements of the situation with which the economic theorist has to deal. And, as it happens, economic theory, at least of the more conservative sort, does concern itself very largely with the problems of price. The traditional theory of distribution deals with the forces determining the prices paid for the services of the factors in production. The theory of "normal value" is essentially a theory of price tendencies. The theory of market value is in general a demand and supply theory of prices.

Modern refinements in the analysis of the forces lying back of demand and supply have not altered the ultimate bearings of the theory. The formulating of equations between value and marginal utility on the one hand and marginal subjective costs on the other hand has of itself final significance only for a Crusoe economy. So far as the analysis of market forces is concerned, these modern developments of theory can scarcely be held to do more than to bring to light some of the principles which govern the choices made between the various alternatives open to buyers and sellers of commodities and services. In several representative modern treatises market prices are explicitly recognized as the pivotal facts in the situation, — determining, as independent variables, the choices which individual producers and individual consumers make between the alternatives open to them, and at the same time determined, as dependent variables, by the aggregate selective process.

But the real significance attached to the subject of price in pure economic theory has been in general much less than one would infer from its apparent prominence. For the notion of price has figured in large part as a convenient and workable substitute for the supposedly more general, tho more cumbersome, concept of exchange value. In other words, so far as the pure theory of exchange has been couched in terms of price, it has been felt that the procedure involved some sacrifice of scientific rigor, and was to be justified only on account of the simplicity gained in exposition.¹ That "price is value expressed in

¹ Even Marshall, whose theory is cast more consistently in terms of price than that of any other writer since Cournot, explains (*Principles of Economics*, 5th ed., p. 62) that in his treatise "the price of anything will be taken as representative of its exchange value relatively to things in general, or in other words as representative of its general purchasing power." A more explicit statement is that of Pareto (*Manuel d'Économie*

terms of money" is the common formula by which the transition from one concept to the other is effected. Ignore changes in the general purchasing power of money and prices become accurate measures of exchange values and hence, in the analysis of the market, adequate substitutes for them.

From this general trend of the systematic expositions of economic theory rather than from any unequivocal statement relating to the point at issue, it may be inferred, I think, that value is very generally thought of as logically antecedent to price. Value is the primary, price the derivative concept. This subordination of price to value puts aside the fact that concretely exchange values emerge only from the actual process of exchange (and there emerge as prices) as of minor import for the purposes of pure theory. The only logical excuse for this procedure which occurs to me is that value is the more general of the two concepts and hence has some claim to logical priority. But this greater degree of generality is purchased, I am inclined to think, at the expense of precision and reality.

In most of the definitions exchange value falls into one or the other of two categories. In the one it appears as the general purchasing power or general ratio of exchange of a commodity, a notion which is vague and abstract in the highest degree. The makers of index numbers have had to explain repeatedly that they are dealing only with averages of the *varia-*

Politique, p. 209): "The general notion of the price of one commodity in terms of another is useful in economic science because it eliminates money. In practice the prices of all commodities are stated in terms of one of them, which is called money, so that it is difficult to avoid speaking of price in this sense when one is discussing concrete phenomena. Even in theory it is very useful to introduce this notion at the first. This, of course, anticipates the theory of money, which ought to come after the general theory of economic equilibrium, but there is no great harm in this, especially if the increased lucidity in exposition which the use of this concept gives is taken into account."

tions of particular prices; that a measure of the general purchasing power of money is not only impossible, but inconceivable. There is no way in which the imagination can blend into one concept the bushels of wheat, the tons of coal, and the yards of cloth a given amount of money will purchase. The notion of the "general purchasing power" of money or of a commodity is not simply loose and indefinite; it is meaningless.

In the other class of definitions value appears, not as general purchasing power, but as any one of an aggregate of purchasing powers. In this sense a commodity is said to have not one but many values, corresponding to its specific ratios of exchange with all other commodities. Price, or money value, appears in this view merely as one species of a large genus. It seems fairly clear that this notion of value is really derived, by analogy, from the notion of price. Given the ratio at which each of two commodities exchanges for money and it is a matter of simple arithmetic to determine the "value" of each in terms of the other. Clearly here is something more tangible than is the notion of "general purchasing power." But this "generalized price concept" of value, as it might be called, is not free from difficulties of its own.

Ostensibly it is not a mere derivative of the notion of price but shares in the general claim of the value concept to priority and independence. It leads to the hypothetical elimination of money as an essential part of the mechanism of the market, and to a view of the valuation process in which values are pictured as determined as tho under a régime of pure barter. Money is brought in at the end of the process (for exposition's sake) as a register or common denominator of the values reached.

Various objections to a view of valuation from which so many of the dominant facts of the actual market have been abstracted suggest themselves. That a state of pure barter is, even historically speaking, a sheer work of the imagination, is perhaps not a relevant objection, if it can be shown that the hypothetical projection of an idealized state of barter into the framework of our money economy really does add a substantial amount of simplicity to economic analysis. For a similar reason I am not disposed to attach much weight to the obvious objection that the complexity of the present system of division of labor and exchange renders a general system of barter altogether unthinkable. Of more cogency is Professor W. C. Mitchell's suggestion¹ that the money concept itself has been an active factor in giving purpose, system, and rationality to economic activity. Modern business is conducted by men who have learned to think in terms of money, and the price-making process is largely in their hands. But this objection, like the others mentioned, presupposes a point of view quite different from that of current economic theory. Within the relatively narrow limits of scope and method which economic theory has set for itself can there be found substantial reason for questioning the legitimacy of the elimination of money in the general view of the valuation process? I believe that such ground of dissent exists, and that it is implicit in the very nature of the theory of exchange value itself.

This theory, in whatever form it may be presented, is essentially a theory of the equilibrium of demand and supply. The values with which it deals are supposed to be those resulting from the efforts of buyers

¹ In his paper, *The Rationality of Economic Activity*, *Journal of Political Economy*, vol. xviii, pp. 208 and ff.

and sellers to seek their own advantage, under conditions which leave them free to buy and sell such things as they please and to buy and sell more or less of these things. Back of all, the tendency toward the equilibrium of marginal satisfactions and marginal costs operates as a controlling factor. Moreover, the values which would be determined if equilibrium could be achieved are consistent one with another. That is, in order to ascertain the value of *A* in terms of *B*, it would be sufficient to know the values of *A* and of *B* in terms of *C*. Now this fundamental postulate of value theory of a tendency toward a static equilibrium is thoroly inconsistent with the other postulate of a hypothetical state of pure barter. In barter there is no efficient tendency toward a definite equilibrium. So far as the ratio of exchange between any two commodities is concerned an equilibrium point might conceivably be reached, but it would be only one of an indefinite number of possible points.¹ And it would be quite unreasonable to expect that there should be any mutual consistency between the ratios of exchange thus accidentally reached.

The fact is that in treating exchange values as money prices in the analysis of supply and demand we are really doing more than availing ourselves of a convenient method of exposition. We are using a necessary and integral part of the analysis. The lucidity which the premising of a general medium of exchange adds to economic analysis (as in the theory of supply and demand *at a price*) is only a reflection of the precision and determinateness which the use of money gives to the actual operations of the market.

¹ For the proof of this statement the reader is referred to Marshall, *Principles of Economics*, 5th ed., Appendix F.

Thus far I have dealt only with some of the logical aspects of the subordination of price to value. It is easily possible that the real explanation of this procedure is historical rather than logical. More specifically, I suggest that it may be a heritage of the interest which Adam Smith and his immediate followers took in the problem of "the real measure of value."¹ Both the theory of national wealth and the theory of distribution seemed to demand a better measure of wealth than that afforded by money prices, with their continual fluctuations.² From this source two divergent streams of theory have flowed. On the one hand we still seek for an "ultimate standard of value." But here the problem is an essentially practical one with distinctly ethical bearings. It is discussed in the literature dealing with index numbers and with the general problem of the standard of deferred payments. It has no direct relation to the pseudo-mechanical problem of economic equilibrium. And on the other hand we have continued to busy ourselves with the problem of the real measure of value in the sense of the *exact* measure of value. Here the marginal utility concept holds the field. But, as previously suggested, there is nothing in the marginal utility analysis that prevents a frank recognition of the dominance of the rôle played by money prices in the

¹ See on this subject, T. S. Adams, *Index Numbers and the Standard of Value*, *Journal of Political Economy*, vol. x, especially pp. 13 and 14.

² This statement is not offered as a complete explanation of the preoccupation of the early economists with the problem of the real measure of value. It seems probable that, as various writers have suggested, the general trend of yet earlier economic thought (running back, very likely, to the analysis of money as a "recognised representative of demand" and a "universal standard of measurement" in Aristotle's *Nicomachean Ethics*, Book V, ch. ix), the philosophical and juristic preconceptions of the economists themselves, and the influence of the dominating principles of the physical science of the day must all be taken into account. It may be noted in this connection that the thing sought was not a "*real* measure of value" in any but a transcendental sense.

system of economic equilibrium. From utility, up through marginal utility, subjective value, and exchange value, to price, is a long and slippery road. Marginal utility, like price, may be said to be a relatively simple concept, derived from the concrete facts of experience. Value, on the other hand, is an abstraction of a very loose and indefinite sort. To pass directly from the analysis of demand to the analysis of price would reduce the dangers that spring from the ever present tendency to treat abstractions as realities.¹

Moreover, frank recognition of the fact that the value concept is a derivative of the phenomena of price would be attended with no substantial modification of the general character of the theory of exchange. What now passes as a concession to the exigencies of exposition would stand forth without apology as a prime factor in the situation. This would, however, be a change of emphasis, and as such it would be wholesome.² For there are indications that we have long since passed the point of diminishing returns, so far as added refinements in the general theory of economic equilibrium are concerned. What is needed is an

¹ An admirable example of the possibilities of this direct form of treatment may be found in Mr. Wicksteed's recent book, *The Common Sense of Political Economy*, ch. i-vi. On the general logical difficulties arising from the hypostatizing of abstractions see H. A. Aikins, *Logic*, ch. v.

² In 1909 the *Railway World* obtained the opinions of a large number of economists on the question whether there could be said to be a distinction between "real prices" and "nominal [or money] prices," corresponding to the common distinction between "real wages" and "nominal wages." The majority of the answers were in the affirmative. Professor C. W. Mixter went so far as to imply that money prices were "apparent" and "real prices" were actual. This seems to me to be transcendental metaphysics of an extreme sort. On the point at issue I find myself in absolute accord with Professor H. J. Davenport, that "to talk of real as against nominal prices is terminological nonsense," and with Professor D. R. Dewey, who said, "The question is absurd. There is but one kind of prices." The distinction does not even have a pragmatist's justification, for, as Professor T. S. Adams suggested, the problem at hand (the possible justification of increasing railway rates on account of the rise in the general price level) should have been approached in another way. See the pamphlet on *Depreciated Currency and Diminished Railway Rates*, Philadelphia, 1909.

analysis of the actual mechanism of the price-making process. There should be no room for such crudities as even an implied determination of prices by the comparison of the "values of commodities" and the (independently determined) "value of money." In short, such a change should make it easier for economics to assume the yet vacant place awaiting it among the positive sciences.

II

When we leave the pure theory of exchange and pass to that general group of problems and theories in which value figures as a measure of the existing stock of wealth or of any part of that stock we encounter difficulties of quite a different sort. Here economists have generally been content to speak of value in the sense of money value. This may be due to the practical difficulties in the way of any other procedure, or to a realization that the summation of "general purchasing power" is akin in principle to an attempt to determine the weight of the solar system. Yet even in this sense value is not equivalent to price. Prices emerge, as concrete facts, only in the process of exchange, and only in the process of exchange does money actually "measure value." Value, as applied to a stock of goods, is nothing more or less than *imputed price*.¹

The grounds and the purposes of the imputation vary. It may take the form of a merchant's appraisal of his stock on hand; it may result from the assessment of property for taxation, or its "valuation" for purposes of public control; it may arise from a

¹ Professor Irving Fisher's definition of value restricts it to this particular usage. "The value of goods is the product of their quantity multiplied by their price." See *The Nature of Capital and Income*, p. 336.

statistician's efforts to reach an estimate of national wealth; finally, it may be implied in such economic theories as those in which "capital" is made to consist of all wealth, measured in terms of money value. Leaving aside the cases in which the imputation is a judgment of "what price ought to be,"¹ as involving an ethical rather than a purely economic problem, the general method of imputation may be said to consist of the establishment of hypothetical prices for all the units of a stock of goods on the basis of the current prices received and paid for similar units of similar goods. In the case of non-reproducible goods, and to a greater or less extent in the case of all non-standardized goods, the process of imputation necessarily involves varying degrees of estimate and guesswork. Moreover, as will be indicated presently, much depends upon the legitimacy of assuming that "similar units" as well as "similar goods" are to be dealt with.

It may be objected that in fact other methods of valuation than the imputation of current prices to a stock are used. "Physical valuation," for purposes of public control might, for example, be cited. Physical valuation is assuredly not an attempt to get at the price of a business undertaking considered as a unit; nevertheless when it deals with "reproduction costs" it is an imputation of current prices to the separate parts of the material equipment of a business unit. When it deals with "the original cost of production" physical valuation is not valuation at all, but simply a measure of the investment of capital. Or, again, it might be urged, with apparently greater cogency, that the valuation of income-yielding goods is in essence a capitalization of the income yielded.

¹ Corresponding to the definition of value which President Hadley prefers. See his *Economics*, p. 92.

This point has a direct bearing on the fundamental assumptions of certain latter day economic theories, and so deserves examination in some detail.

That the method of capitalization is actually used as a method of imputation cannot be denied. But the essential question is whether this method affords, in a rigorous sense, a *determination* of value, or whether it is merely a convenient mode of reaching an estimate of value. I am inclined to take the latter view. In fact, if one holds that the value concept is a derivative of the notion of price, and that the value of a stock is a matter of imputed price, no other view seems possible. Among the things bought and sold in the market are securities and commodities that have more or less definite potencies in the way of conveying money income to their owners. The forces of the market tend to establish definite prices for such commodities and securities, and hence to establish definite ratios between incomes of given amounts and of given degrees of certainty, spontaneity, and futurity, and the prices of the income bearers. In the absence of evidence more directly to the point, the ratios or rates of capitalization thus established for the incomes from certain kinds of goods and securities may be used as the means of imputing price to similar goods and securities, not currently priced in the market, but with known or estimated income-yielding power.¹

The possible objection that the "forces of the market" thus invoked are themselves in large part the resultants of the ratios at which individuals subjectively equate future incomes to present values is not to the point. For we are dealing with market

¹ Such, for example, was precisely the method followed by the experts employed by the Interstate Commerce Commission and the Bureau of the Census in estimating the commercial valuation of the railways of the United States. See Bulletin 21 of the Bureau of the Census, 1904.

values, which, so far as each individual is concerned, must be held to be objectively determined and objectively measurable. Considerations essentially similar to those outlined above hold, *mutatis mutandis*, with respect to the pseudo-capitalization of "psychic income."¹

The value of a stock, then, as an economic concept, may be taken to be a derivative of the fact that particular units of the stock are exchanged or are estimated to be exchangeable at certain prices. The value of a homogeneous stock is got by multiplying the number of units in the stock by the price per unit. For the most part economists have not thought it necessary to mark a distinction between the price of the units exchanged and the value, or imputed price, of the units not exchanged. But Cournot² and a few other writers have deemed it worth while to call attention to the simple and elementary fact that the maintenance of the level of current prices is dependent on not overcrowding the market. Not all the units of any considerable stock, such as the stock of wheat, could be sold at one time at current prices, nor on the other hand, could buyers of any good substantially increase their purchases except at increased prices.

The legitimacy of the notion of the value of a stock seems to hinge on the fact that presumably any one unit of the stock may be added to the amount sold

¹ The foregoing discussion is, I think, in essential harmony with the thesis maintained by Professor H. J. Davenport, in his paper on Capitalization and Market Value, *Yale Review*, vol. xix, p. 132 (Aug., 1910).

² "Under this conception [a sum of exchangeable values] wealth has doubtless only an abstract existence; for, strictly speaking, of all the things on which we set a price, or to which we attach a value in exchange, there are none always exchangeable at will for any other commodity of equal price or value." — *Mathematical Principles of the Theory of Wealth*, Eng. transl., p. 9.

without substantially affecting the price. The imputed exchange value seems to hold rigidly for the particular units of a stock, taken one at a time. If it were not that it would put an additional burden on an already hard-worked adjective, it might be insisted that exchange value, after all, is only *marginal value*. For all except the marginal units the imputed value is purely hypothetical, subject only to the limits set by the existing potential demand and existing potential supply. As Jevons suggested,¹ the theory of demand and supply is properly a theory of *rate of demand and rate of supply*.

A slender stream of goods flows through the market from sellers to buyers, and at the point of exchange this flow is equated (in terms of price) to the stream of money (and money substitutes) flowing in the opposite direction. The vague outlines of a dynamic theory of price are easily imaginable. Such a theory might analyze the forces controlling the volumes and rates of flow of particular kinds of commodities, and the volumes and rates of flow of the parts of the money stream to which these are equated in the market. It could not be expected that such a theory would lead to conclusions substantially different from those reached by the analysis of the forces tending to static equilibrium, and it would be decidedly more cumbersome. But the use of the static method has tended to falsify our view of the facts in some particulars.

Seizing a moment when the two streams are running smoothly and steadily (corresponding to the condition of static equilibrium) we imagine them, in effect, to be suddenly congealed. Then, with this tactical advantage, we devote ourselves to a painstaking analysis of the proximate factors determining the

¹ Theory of Political Economy, 3d ed., p. 64.

prices of the goods which happened to be thus arrested at the very moment when they were passing through the narrow channel of exchange. But to be satisfied with this achievement would be to fall short of the opportunity for system making. So we examine the upper reaches of the congealed stream of goods, imputing value to everything we find, on the basis of the price units discovered at the point of exchange. Going still farther back we subject to the same Midas-like touch the upper reservoirs of goods that are usually only drawn upon when the stream is running dry. And finally, by a supreme *tour de force*, we convert into value units those outlying pools of intimate personal belongings, not customarily thought of in terms of money value, even by those who prize them most, and from which normally only a thin rivulet trickles to join the stream of goods passing through the market place.

In short, for system's sake, the whole material equipment of human living is recast in molds fashioned after the notions of catallactics. This view of things is implicit in a large part of the body of systematic economics. But I wish frankly to say that in my opinion the symmetry and logical completeness of the systems of Professor Fetter and Professor Fisher are due in no small part to the fact that they have gone farthest on this road.

III

If the value of a stock is a matter of imputed price, and if this is in reality an accurate measure only for the marginal units of a stock, the size of unit to be employed in the imputation becomes a matter of some importance. The value got by dividing the stock

into the smallest possible units will be the maximum; the value got by considering the whole stock one unit will be a minimum. This suggestion should not be confused with the objections urged by Mr. Hobson and others against the theories of marginal productivity and of marginal utility on the fallacious ground that the results reached depend upon the size of the units chosen. For these theories deal with changing ratios (of utility to quantity or of product to labor) and in whatever form they are stated there is implied in them the mathematical notion of a limiting ratio.¹ There is no implication of this sort in the ordinary conception of the value of a stock of goods. Here we have to deal with the imputation of market prices to concrete units of definite size.

An example taken from actual experience may serve to make the matter clear. A forty-acre tract of land on the outskirts of a small village was assessed for taxation on the basis of an actual value of \$8000, or \$200 per acre. Half of one acre was subsequently sold as a building lot, and assessed at \$400, or \$800 per acre. As the building lot was not taken from the best located part of the tract, its owner made complaint of over-assessment. A little investigation showed that tho several more building lots of the same size could be sold at or near a price equivalent to \$800 per acre, the tract as a whole could not be sold for much more than \$200 per acre. Any one acre, taken by itself, was worth \$800; yet to have multiplied this amount by the number of acres would have given the absurdly high total value of \$36,000. What, by the method of price imputation, was the total value of the tract ?

¹ All of which is explained in non-mathematical fashion and with painstaking lucidity in Wicksteed's *The Common Sense of Political Economy*, Book I, ch. II.

The foregoing illustration involves more than the principles implied in the imputation process, *i. e.* that the market must not be overcrowded and that the rate of supply is supposed to be normal. The fact seems to be that the price of building lots and the price of the tract as a unit were affected by and adjusted to entirely different conditions of demand. The example is probably an extreme one. But that the total value of a tract of land depends in part upon the way in which it is subdivided is an unquestionable fact of real estate operations.

The field of corporation finance furnishes similar problems. The sum of the value of the disintegrated parts of a corporation's material equipment together with the value of its franchise, if this can be sold separately, is one thing; the price which the corporation's assets as a whole would bring under the hammer is another thing; and the total value of the outstanding securities of a corporation may be yet another thing. Here again the essential thing in the situation is the fact that the equities in the corporation's property may be subdivided in different ways, and that the field of demand varies with the method of subdivision.

Take, for example, the problem of the value of a corporation's securities. Here, as in the case of some railroad corporations, the bulk of the stocks and bonds may be securely held for purposes of investment and control. The value imputed to these is derived from the prices of the relatively small part of the securities which happen to figure actively on the stock exchange. Disregarding the element of control, which is an abnormal peculiarity under American railroad conditions and hence negligible for the present reasoning, and assuming that the rate of supply is not under any circumstances apt to be extremely

high, this method of imputation may be said to give fairly precise results in such cases. For such securities are distinctly marketable goods, and their market is highly organized and elastic.

But the fact remains that the total value of the equities in a corporation depends on the way in which they are subdivided. Bonds of small denominations find a market not open to bonds of larger denominations. Moreover, in a complexly capitalized corporation, the classification of securities is such that it offers to buyers of incomes a carefully graded assortment of risks. This maximises the selling or capital value of a corporation's income-earning power. Different levels of demand are tapped and the result is better than if the curve of diminishing buyers' prices for any one level were followed too far. Preferred stocks may sell readily when bonds are a drug in the market. That changes in total value are affected by a skilfully conducted railroad reorganization (even when no new capital is invested and net earning power is not increased) is well known.

All these considerations may have some bearing on practical problems of assessment and of public valuation. It is possible that they deserve some consideration in connection with any theory which deals with the notion of "total wealth measured in terms of money value," altho I am disposed to regard them as of relatively less significance than the more general views suggested in the second division of this paper.

There remains the problem of the bearing of the general limitations of the value concept on the statistical problem of the measurement of national wealth. If value is not additive, of what significance is the

statistical summation of the wealth of a country? ¹ It might be thought that the validity of the statistical undertaking stands or falls with the validity of the theoretical notion of total wealth measured in terms of value. But over and beyond the fact that we should expect to find in our theoretical notions a degree of precision not attainable in statistical practice, the statistical undertaking stands on firmer ground.

The total wealth with which it deals is avowedly only the sum of the wealth of individuals. An individual's wealth includes generally only a small fraction of the stock of any commodity, and the difficulties to be taken into account are mostly of the relatively minor kind encountered in the assessment of property for purposes of taxation. Income statistics being lacking, an individual's wealth constitutes the only available index of his economic well-being. The summation of wealth for the nation, divided by the number of families, gives a roughly accurate notion of the general diffusion of well-being. The estimate of national wealth would be justifiable, even tho it meant nothing in itself, since it leads roughly to a result that does mean something. Taken by itself it gives us merely the sum of the imputed prices of individual property rights.

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¹ Disregarding the well-known practical difficulties of the undertaking. On some of the aspects of the question suggested in the text one may consult with profit Emile Chatelain, *De l'Evaluation du Capital National*, *Revue d'Économie Politique*, vol. xxi, pp. 361 and ff.

THE DEVELOPMENT OF THE THEORY OF MONEY FROM ADAM SMITH TO DAVID RICARDO

SUMMARY

Doctrinal supremacy of *Wealth of Nations* from 1776 to 1810, 430.—Theory of money alone underwent notable change during this period, 431.—Defect in Adam Smith's theory, 436.—The Bank Restriction of 1797, 441.—The writings and influence of Boyd, Thornton, King, Parnell, Foster, and Wheatley, 444.—The service of Ricardo, 468.

More than a generation separated the appearance of Adam Smith's "*Wealth of Nations*" in 1776 from the publication of David Ricardo's "*High Price of Bullion*" in 1810. Memorable as these years were with events in the industrial life of England, they witnessed but little change in the prevailing body of economic thought. The "*Wealth of Nations*," despite Hume's lament that the two stately quartos required too much thought and reflection to be popular, reached a tenth edition in 1799.¹ In the political world, Grenville in 1800 could remind Pitt of their common conviction as to "the soundness of Adam Smith's principles of political economy."² In academic circles, Dugald Stewart was Adam Smith's successor in office and in spirit in the University of Edinburgh, attracting from 1800 on a notable group of gifted students to his eloquent exposition of the "*Wealth of Nations*."³ In the intellectual field, young men like Francis Horner,

¹ Rae, *Life of Adam Smith* (1895), pp. 285, 293.

² G. B. Smith, Grenville (quoting Stanhope's *Life of Pitt*) in *Palgrave, Dictionary of Political Economy*.

³ Veitch, *A Memoir of Dugald Stewart*, in *Stewart's Works* (ed. Hamilton, 1858), vol. x, p. iv.

Lord Webb, James Mill, and Thomas Chalmers were supplementing legal and theological studies by critical reading of Adam Smith's text.

There was some minor dissent from certain of Adam Smith's conclusions:¹ Dugald Stewart seems to have been less of the docile expositor and more of the independent critic than he would have us believe. James Anderson stood out vigorously for the utility of corn-law bounties. Jeremy Bentham filed a cogent brief against the impolicy of usury laws. Malthus exposed the weakness of Adam Smith's reasoning in the matter of poor-law relief. The Earl of Lauderdale distinguished with much acuteness the concepts of public wealth and private riches, and Tierney, in the Commons debate upon the bill to prevent the forestalling of live cattle, declared that if the poor were to rise in a mass on account of the high price of meat, "the right honorable gentleman would prefer the riot act to all the reasonings of Adam Smith."²

But, withal, the supremacy of the "Wealth of Nations" remained in 1810 still unquestioned. The influence of J. B. Say's "Traité" — first published in 1803 — was not felt in England until a decade later. Malthus, in 1824, used the term "the new school of political economy" to distinguish the doctrines of Ricardo, Mill, and McCulloch from those of Adam Smith;³ but to Lord King, in 1803, the same phrase "old and new systems of political economy" still meant the opinions of the mercantilists, on the one hand, in contrast to those of Hume, the Physiocrats,

¹ Hollander, *David Ricardo* (1910), pp. 20-21.

² *Parliamentary History*, vol. xxviii, 825 (June 29, 1797).

³ *Quarterly Review*, January, 1824; cf. Bonar, *Malthus and his Work* (1886), pp. 275-281.

and Adam Smith on the other.¹ Even Francis Horner, independent thinker and critic that he was, declining in 1803 a publisher's invitation to furnish a set of notes for a new edition of the "Wealth of Nations," wrote to Thomas Thomson of "the superstitious worship of Smith's name"; and added, "his popular and plausible and loose hypothesis is as good for the vulgar as any other."²

But in one particular field — the theory of money — there was marked advance. Here as elsewhere Adam Smith's exposition, partial and defective tho it was, prevailed for a score of years without dissent. But in 1797 came the Bank Restriction. The extraordinary series of monetary events leading up to and growing out of the suspension subjected the accepted doctrines to new and unfamiliar tests, and focussed the attention of a remarkable succession of keen minds upon underlying principles. The result was that in the decade from 1797 to 1807 the theory of money underwent substantial modification, and attained the sure outline, if not the full detail, in which it figured in economic thought for the next half century.

It has been customary to ascribe this reconstruction of monetary opinion to Ricardo and the Bullion Committee, with at best minor acknowledgment of the work of immediate predecessors.³ But as a matter of fact, Ricardo's initial service — and Ricardo himself was unmistakably insistent as to this — was as expositor

¹ *Thoughts on the Restriction of Payments in Specie at the Banks of England and Ireland* (1803), pp. 38-39.

² Horner (ed.), *Memoirs and Correspondence of Francis Horner* (1843), vol. i, p. 239.

³ Thus Hoffmann, *Kritische Dogmengeschichte der Geldwerttheorien* (1907), Kap. II; Whitaker, *The Ricardian Theory of Gold Movements*, in *Quarterly Journal of Economics*, February, 1904. More surprising is the statement (J. F. Johnson, *Money and Currency*, 1905, p. 292) that Ricardo was a member of the Bullion Committee, being selected as a representative economist!

and controversialist, and his earliest pamphlet in 1810 was designed as an explicit restatement of what had been already said and written. In the years that followed, Ricardo made real and distinguished contribution to the development of monetary theory and practice; but his starting point here was not, as in the case of his general economic thought, Adam Smith, but a body of monetary doctrine different from and in advance of that set forth in the "Wealth of Nations."

The purpose of the following pages is to make clear this development of the theory of money from the form in which it was enunciated by Adam Smith to that in which it may be regarded as Ricardo's intellectual heritage.

I

The theories of monetary circulation current in England upon the eve of the Bank Restriction found traceable origin in Locke, detailed exposition in Harris, familiar expression in Hume, critical qualification in Sir James Steuart and Montesquieu, and definitive exposition in Adam Smith. Less familiar writers — Vaughan, Barbon, Petty, Davenant, North, and Berkeley — were occasionally cited in confirmation of particular doctrines and in illustration of abstract propositions.¹ But serious students like Francis Horner and Lord Webb began with Adam Smith's famous fifth chapter, and thence worked their way back through Sir James Steuart, Hume, and Harris to the eighteenth century liberals.²

¹ Lord Liverpool and the Earl of Lauderdale alone displayed any larger acquaintance with the early pamphlet literature on currency and banking.

² Horner (ed.), *Memoirs and Correspondence of Francis Horner* (1842), vol. 1, pp. 164-169.

The general features of Adam Smith's monetary doctrine were clearly defined.¹ The inconveniences of barter early lead to the use of an interposed commodity in economic exchange. Such a medium, being itself subject to variations in value, cannot be a perfectly accurate measure of value; but experience has shown that the precious metals, by virtue of favorable physical properties, are best fitted to serve as money materials. When both metals are employed one is designated as the standard, and the ratio of the other thereto is fixed either by the market or by public law. The purchasing power of a coin is determined by intrinsic content regardless of its nominal designation, and the concurrent use of two classes of money of unlike quality is prevented by the tendency of the public to hoard the better kind. The value of the standard money varies directly with the number of exchanges to be made and the frequency with which they are effected, and inversely with the whole quantity of money in use and the rapidity of circulation. Foreign commerce causes a distribution of the standard money, and artificial attempts to increase a particular country's stock are useless or mischievous. Variations in the value of money benefit one class of society at the expense of another, appreciation injuring the debtor, and depreciation, the creditor classes. Any substantial difference between the market and the mint price of bullion and any heavy fall in the foreign exchanges is due to the bad state of the coinage and may be promptly rectified by its restoration.

In the matter of paper money, Smith's expressions were no less definite. The more notable of his predeces-

¹ *Wealth of Nations* (1776), Book I, chap. v. (Of the real and nominal price of commodities).

sors — Hume and Harris — writing a generation before, when Scotland was menaced with a reckless extension of bank-note issues and circulating credit, had denounced such "counterfeit money."¹ But Adam Smith's opinions took shape at a later time, when the fever had run its course and when the disastrous collapse of the Ayr Bank and its consequences — made vivid to him by the heavy involvement therein of the Duke of Buccleugh² — threatened to bring all paper issues into popular disfavor. To justify a useful institution and at the same time to emphasize the safeguard essential to its use were Smith's impelling motives, and his very phrases became classic. Money is a part of the circulating capital of a society and its maintenance occasions a corresponding diminution of net revenue. Accordingly, the substitution of paper for gold and silver replaces an expensive with a much less costly and sometimes equally convenient instrument. Of the various kinds of paper money, promissory bank-notes payable on demand are best known and adapted for this purpose.³ But the total amount of paper money which the circulation of a country can

¹ Hume, *Essays, Moral, Political, and Literary (Of Money)*; Harris, *Essay on Money and Coin* (1757) Part. I, p. 101. In the same strain is Lord Elibank, *Essay on Paper Money and Banking* (1755), reprinted in Lord Overstone's *Scarce and Valuable Tracts on Paper Currency* (1857). Hume's opinions were disputed (the more notes the Banks can circulate in this way, the more will industry and trade be promoted) — in Wallace, *Characteristics of the Present Political State of Great Britain* (1756, section on Paper Money and Banking, reprinted in Lord Overstone, *op. cit.* — a paper which certainly does not justify McCulloch's verdict of "both liberal and ingenious," *ibid.*, x). Bishop Berkeley's acute observations, Querist, (1910 reprint, ed. Hollander), Part I, §§ 35-37, 199-286 *et passim*, seem to have excited considerable interest but to have exerted little influence. The author of *Thoughts on Money, Circulation and Paper Currency* (Edinburgh, 1758) altho admitting (p. 19) in the spirit of Petty and Hume that "Paper credit multiplies money, and more than a certain quantity of money is unnecessary," relapsed into the old heresies that increase in the money supply reduced interest, increased employment, and augmented population.

² Rae, *Life of Adam Smith* (1895), pp. 253-255; also Mr. Cannan's note to his edition (1904) of *Wealth of Nations*, vol. 1, p. 296.

³ *Wealth of Nations* (1776), vol. 1, pp. 345, 350.

absorb never exceeds the metallic money which would circulate in lieu thereof;¹ any excess of currency must be followed by an export of bullion.² This had been clearly exemplified in the early experiences of the Bank of England and the Scotch banks, whereby a continuing policy of excessive note issue had caused a steady loss of bullion and a chronic replacement of the Bank's gold. Sound banking policy therefore required that the note issues of any particular bank should not exceed, either in discount or in cash accounts, that part of its customers' capital which they "would otherwise be obliged to keep . . . unemployed, and in ready money for answering occasional demands."³

All of this related to convertible paper. Adam Smith probably never conceived it possible that the Bank of England, the stability of which he deemed "equal to that of the British government," should suspend specie payments.⁴ The most unfavorable cases were such as involved "difficulty or uncertainty of obtaining immediate payment," — the "optional clause" of the Scotch banking companies, the paper currencies of Yorkshire, and the paper emissions of the American colonies.⁵ In such cases he recognized that the paper money, like so much debased coin, "would, no doubt, fall more or less below the value of gold and silver," and result in an unfavorable exchange with the country or district preserving an intact standard.⁶

¹ *Ibid.*, vol. 1, p. 377.

² *Ibid.*, vol. 1, p. 352.

³ *Ibid.*, vol. 1, pp. 364, 367, 371.

⁴ *Ibid.*, vol. 1, p. 387.

⁵ *Ibid.*, vol. 1, p. 394.

⁶ *Ibid.*, vol. 1, pp. 394–395. As early as 1739 the author of *A Discourse concerning the Currencies of the British Plantations in America* — undoubtedly the "honest and downright Doctor Douglas," upon whom Adam Smith placed full reliance — declared as to the colonial currencies, "The repeated large Emissions of Paper Money are the Cause of the frequent rise of the Price of Silver and Exchange" (*Discourse*, 1897 reprint, ed. Bullock, p. 325; in Lord Overstone, *op. cit.*, p. 21).

The theory of money, as set forth in the "*Wealth of Nations*," had thus attained notable development. The functions of money as a medium of exchange and a measure of value, the impracticability of a dual standard, Gresham's law, the relation of money to prices, the effect of variations in the value of money upon debtor and creditor classes, the economy of paper money — were all more or less clearly recognized and enunciated.

II

The serious lapse in Adam Smith's exposition — the more significant in the light of subsequent monetary happenings — appeared in the inevitable query: How much money ought a country to have and what are the symptoms and measure of excess or deficiency? It was precisely about this point — the forces determining the normal amount of a country's money supply — that succeeding controversies raged, — the repeal of the Bank Restriction in the first quarter of the nineteenth century, the revision of the Bank Charter in the second, — and it was precisely here that the "*Wealth of Nations*" was lacking. That there was, at any given time and in the case of every particular country, a customary amount of money which neither design nor circumstance could permanently augment, was a necessary corollary of all argument against mercantilist theory and balance of trade policy, and this proposition Adam Smith, like a succession of writers before him, maintained with great force and abundant illustration. But to the further question, "how much money is it right and sufficient for a country to have?" — Smith gave no answer, beyond saying vaguely that it was determined by "effectual demand,"

being always the sum required to circulate and distribute to its proper consumers the annual produce of the land and labor of the country.¹ He did indeed imply that this sum bore some proportion to the whole value of the annual produce circulated by it, but he added² that such proportion had been computed by different authors "at a fifth, at a tenth, at a twentieth, and at a thirtieth part of that value," and refrained from venturing upon a formula of his own.

Adam Smith made familiar use of the failure of Spain and Portugal to augment their money supply by accumulation;³ and he recounted the early experiences of the Bank of England and the Scotch banks, as to a chronic loss of bullion. But such occurrences were cited only in confirmation of his empirical assumption that the amount of money which a country could "easily absorb and employ" was a definite sum, fixed by the interior exchange requirements of that particular country and irrespective of all external conditions.⁴ Redundancy—to whatever cause due, whether mines or banks—would be followed by an efflux of gold; but only for the reason that the "channel of circulation" must in such event overflow, and this overflow, being too valuable to lie idle, was sent abroad "to seek that profitable employment which it cannot find at home."⁵

The absence of any adequate discussion by Adam Smith of the normal quantity of a country's supply

¹ *Wealth of Nations* (1776), vol. II, p. 10, and vol. I, p. 352; cf. also vol. I, p. 372, as to the issues of the Scotch banks.

² *Ibid.*, vol. I, p. 356; more curious was Petty's estimate in *Quantulumcunque*, Query 25, in *Works* (ed. Hull, 1899), vol. II, p. 446.

³ *Wealth of Nations* (1776), vol. II, p. 10.

⁴ *Ibid.*, vol. I, p. 363.

⁵ *Ibid.*, vol. I, p. 352.

of money and of the test of redundancy is the more surprising in view of the frequency with which the doctrine of the "territorial distribution" of the precious metals had cropped out in earlier economic writing. With some justice Ricardo was able in 1810 to speak of "the most approved writers in political economy" sharing such an opinion. North, Locke, Berkeley, Cantillon, Petty, and Barbon had in turn pointed out the fallacy of the mercantilist accumulation of specie, and had set forth that the amount of money in any particular country tends to a fixed and definite proportion of the nation's resources. In Hume and Harris, casual expressions were replaced by explicit and unmistakable exposition, not indeed as a direct phase of monetary theory but as a final refutation of the mercantilist fallacy of metallic accumulation. Money is like water, Hume declared¹—and his argument was developed and amplified by the author of the "Essay upon Money and Coin,"² "the judicious and intelligent Harris," in Chalmers's phrase³—tending everywhere to a level through the means of relative prices and international trade, and this not by any physical force but by "a moral attraction arising from the interests and passions of men, which is full as potent and infallible." If four-fifths of all the money in Britain were destroyed in a night, or, conversely, if the supply were multiplied five-fold, a relative level would promptly be restored, and the same causes which would correct these inequalities due to the miraculous "must prevent their happening in the common course of nature,

¹ *Essays* (Of the Balance of Trade).

² Part I, ch. 2, § xvii, "the quantity of money everywhere, will naturally find a certain level or proportion."

³ *Essay on Commerce* (2d. ed., 1811), p. 39.

and must forever, in all neighboring nations, preserve money nearly proportionable to the art and industry of each nation.”¹

It is true that Hume's opinions, widely circulated and influential as they were, did not pass unchallenged. A few years later Sir James Steuart controverted Hume's position both as to the relation of money to prices and as to the tendency of money everywhere to maintain its level, with a vehemence that in itself might have been expected to arrest Smith's attention. Insisting that it was one of the objects of “a statesman's attention” to maintain “a just proportion between the produce of industry, and the quantity of circulating equivalent, in the hands of his subjects, for the purchase of it,”²—Steuart denied with characteristic indirection Hume's “territorial distribution” theory.³ In positive exposition, however, Steuart made little progress beyond asserting that “It is impossible to determine the proportion of coin necessary for carrying on the circulation of a country, especially of one where neither loan, or paper credit, that is the melting down of solid property, are familiarly known.”⁴

As a matter of fact, however, Adam Smith was neither convinced by Hume nor converted by Steuart. He merely accepted the fact and gave little concern to the theory. Indeed there was little in contemporary monetary experience to emphasize the importance of such an inquiry. England was not then, as a generation later, confronted with the inconveniences of monetary redundancy on the one hand, nor exposed

¹ *Essays (Of the Balance of Trade).*

² *An Inquiry into the Principles of Political Economy* (1767), vol. 1, p. 375.

³ *Ibid.*, vol. 1, p. 416.

⁴ *Ibid.*, vol. 1, p. 376.

to the evils of monetary scarcity on the other. In so far as the currency of a country might be augmented by metallic accumulation, Smith deemed himself concerned with a worn-out mercantilist fallacy rather than a present monetary problem,¹ and was content with the familiar *reductio ad absurdum* as to Spain's experience. In so far as the source of augmentation might be a note-issuing bank, Smith shared the view that the absorption of such a well-regulated paper money was accompanied by an equivalent displacement of specie.² In this sense Hume, in 1752, had spoken of paper credit as of public convenience only when issued, as by the Bank of Amsterdam, upon the basis of equivalent bullion, and of which any further emission was harmful in that it expelled a corresponding amount of specie;³ and Harris, writing in 1758, had repeated that any increase of bank-notes much beyond an identical stock of bullion was likely to prove mischievous both by "increasing in effect the quantity of circulating cash beyond its natural level; and by endangering, in a cloudy day, their own credit."⁴

In short, the possibilities with which Adam Smith thought he had to deal in the matter of an increase in the country's money supply were, first, a futile accumulation of specie by manipulated trade or colonial exploitation, and, second, an excessive issue of notes payable on demand. It was to these contingencies alone that he confined his argument and directed his theory. That it might be possible for the currency of England to be swollen by a continuing issue of inconvertible bank-notes and that, in consequence,

¹ *Wealth of Nations* (1776), Book IV, chap. 1.

² *Ibid.*, vol. 1, pp. 388-400.

³ *Essays* (*Of the Balance of Trade*).

⁴ *Essay upon Money and Coins*, Part I, p. 101.

there must be, as the basis for positive legislation, some theoretical determination of the normal money requirement were developments of which Smith and his immediate successors never dreamed.

III

The quiescence into which monetary discussion had sunk in the closing years of the eighteenth century was rudely disturbed by the Bank Restriction of 1797. The ink had barely dried upon the Order in Council suspending the further issue of bullion, before the issues involved had become matters of active discussion in Parliament, and within two decades a controversial literature of extraordinary extent and intensity had developed.

The earliest sentiment reflected Adam Smith's opinions with hardly a change.¹ In the House of Commons Sheridan voiced the popular dread that the cash payments once suspended "the paper of this country would ultimately experience the fate of the French" assignats or mandats since "both contained the idea of compulsion."² Fox asserted that bank-notes were depreciated, but he based the charge solely upon "the extraordinary run upon the bank," and urged in correction that the Bank should "diminish the quantity of paper, and reduce that disproportion which exists between paper and specie."³ Pitt refused assent to Nickoll's proposed limitation upon the further issues of the Bank,⁴ contending that

¹ The *Wealth of Nations* was cited repeatedly in the course of parliamentary debate upon the Restriction bills; see *Parliamentary History*, vol. xxxiii, 353, 386, 522, 548-549, 563.

² *Ibid.*, vol. xxxiii, 64.

³ *Ibid.*, vol. xxxiii, 44, 74.

⁴ *Ibid.*, vol. xxxiii, 357.

paper was desirable "if restrained within due limits," and if "more should not be issued than the country required." Such "only limits" were — quite in the spirit of the Bank's policy — "the extent of the scale of commerce, and the nature of the securities on which accommodations should be granted."¹ Even Lord Liverpool in the "*Treatise on the Coins of the Realm*," written at this period altho not published until 1805, went no further than to sympathize with Adam Smith's contention that "there must be some limitation" upon the Bank's issues particularly in the matter of the smaller coin-displacing denominations, — as against the doctrine that "by a new sort of alchemy, Coins of Gold and Silver, and almost every other sort of property, may be converted into Paper."²

Discussion entered upon a new phase with Pulteney's denunciation of the Bank as a national danger which in the hands of an ambitious minister might "become the means of establishing a fourth estate, sufficient to involve this nation in irretrievable slavery." He charged the occasion of the Restriction to the "misconduct" of the Bank, proposed an earlier date (May 6 instead of June 24) for the resumption of cash payments than that recommended by the House Committee of Secrecy, and urged the propriety of establishing an independent bank in case the Bank of England could not resume payments at the time fixed.³

Pitt had his majority well in hand and the House refused Pulteney even leave to bring in a bill; but the project continued to excite great public interest, and Macleod indeed ascribes the successful efforts of the

¹ *Ibid.*, vol. xxxiii, 356-357.

² *A Treatise on the Coins of the Realm* (1805), p. 228.

³ *Parliamentary History*, vol. xxxiii, 370, 393.

Bank Directors in 1800 to secure a renewal of the charter twelve years before its expiration to their alarm at the popular effect of Pulteney's proposal.¹

The threat of Pulteney's practical efforts, rather than the force of his critical reasoning stirred Sir Francis Baring,—Erskine's "first merchant in Europe,"—to enlist the force of his name and the persuasiveness of his argument in the Bank's defence. In his "Observations on the Bank of England,"² published in the spring of 1797, and in the "Further Observations,"³ issued some months later, after the policy of restriction had been definitely accepted by the Bank and sanctioned by the Government, Baring justified the original suspension and ranged himself in opposition to such radical proposals as an enlargement of the Bank's capital or the organization of a rival institution. Averse to the Bank's resuming

¹ *Theory and Practice of Banking* (2d. ed., 1866), vol. i, p. 405. Immediate resumption was urged in *New Circulating Medium: being an Examination of the Solidity of Paper Currency, and its Effects on the Country at this Crisis* (1797). An addition of ten millions to the Bank's capital for the reduction of note circulation was proposed by Sir John Sinclair in *Letters to the Governor and Directors of the Bank of England* (1797). The author of *A Method of Increasing the Quantity of Circulating Money upon a New and Solid Plan* (1799) suggested that there be issued to any fundholder transferring his stock to the Bank as trustee circulating "stock notes" to the amount of one fourth of the nominal sum so deposited. In the very much abler *The Iniquity of Banking: or, Bank Notes proved to be an Injury to the Public, and the Real Cause of the Present Exorbitant Price of Provisions* (1800), it was proposed to retire the Bank's notes and to supply the gap with an equal quantity of "national paper currency," the proceeds to be applied in the first instance to the reduction of the national debt; see also Tierney's speeches in the Commons debate of March, 1800, on the Bank Charter Renewal Bill (*Parliamentary History*, vol. xxxiv, 1). Allardyce, *Address to the Proprietors of the Bank of England* (1796), and *Second Address to the Proprietors of the Bank of England Stock* (1801) were influential as affecting the Bank's relation to the public (cf. *Ricardo's Proposals for an Economical and Secure Currency*, 1816, pp. 93-95); but they contained no contribution to monetary theory. Among the best of the pamphlets called forth by the high prices of 1800 were two by an anonymous author (*Common Sense*): *The Cause of the Present threatened Famine traced to its Real Source* (1800), and *The Discharge of £37,000,000 of the National Debt* (1800).

² *Observations on the Establishment of the Bank of England, and on the Paper Circulation of the Country* (1797).

³ *Further Observations on the Establishment of the Bank of England, and on the Paper Circulation of the Country* (1797).

payment during the war, while a possibility existed of being obliged to suspend again, and urging strongly that the notes be made a legal tender for all purposes, Baring nevertheless admitted that some efficient check and control must be put upon the Bank, both as against the self-interest of the proprietors and the influence of ministers. He proposed that this should take the form of limiting the amount beyond which the notes of the Bank should not be suffered to circulate, adding even that this aggregate ought not much to exceed the amount of what was then in circulation.

Baring wrote as an apologist and an advocate, and his pamphlets were without trace of analysis or independent inquiry. His equipment was that technical detail of the banker made rigid and doctrinaire by a fixed and positive bias. He believed that "from long experience, the Directors of the Bank must understand correctly the amount to which their notes can circulate without depreciation or discount"; he advised that country banks should be prohibited from issuing notes payable on demand; and he insisted that the Bank, as a corporate body, should be rendered independent of ministers. Whatever influence his pamphlet may have exerted was in the nature of admonition to the Bank. As a contribution to currency theory its significance was *nil*.

A very different spirit, however, spoke forth in Walter Boyd's "Letter to Pitt,"¹ written in the closing month of 1800, and published early in the following year. Boyd's career had been remarkable. Established as an important banker in Paris, he had been exiled and his property confiscated in 1793.

¹ A Letter to the Right Honourable William Pitt, on the Influence of the Stoppage of Issues in Specie at the Bank of England; on the Prices of Provisions, and other Commodities (1801; 2d. ed. corrected, 1811).

He then settled in London, and speedily became a prominent figure in the financial life of the capital, a member of Parliament, and an influential adviser of Pitt.¹ The stringency of 1797 found Boyd deeply involved in extensive transactions, and, failing the anticipated restoration of his confiscated French estate, the banking house of which he was a leading figure was forced to suspend. But the reverse was such as to bring no discredit upon the principal nor to delay the reorganization of his affairs. In 1800 Boyd was again, by the range of his experience, the readiness of his pen, and the extent of his connections, a conspicuous figure in English financial circles. Thus the authorship no less than the content of his open letter to the Prime Minister "on the influence of the stoppage of issues in specie at the Bank of England, on the prices of provisions, and other commodities," was calculated to arrest attention and arouse discussion.

The prime purpose of Boyd's pamphlet was to demonstrate that the rise in prices which had gradually been taking place in England during the two years preceding and which had recently become notable had been brought about by an over-issue of the Bank's paper. The actual fact of such a "great and general rise in prices" was accepted, not as in the case of Wheatley a few years later, upon the evidence collected by Arthur Young and Sir George Shuckburgh, but, more vaguely, upon "the concurring testimony of a whole community" evident in that "every man feels, in his abridged comforts, or in his increased

¹ In 1796 Boyd came to the fore as the author of a plan, approved by influential London merchants and submitted to the Government, for the relief of the prevailing stringency by the appointment of an unsalaried board who should issue, in discount of bills of exchange, short time interest-bearing notes, convertible into Bank of England paper. The plan was shelved by Pitt in favor of a proposed funding of the floating debt as recommended by the Bank; but for some time thereafter it engaged public attention.

expences, the existence of this melancholy truth." In the public controversies which immediately preceded the Restriction, Boyd had been loud in asserting that the contraction in Bank circulation was responsible for the general fall in prices and the widespread distress. Now, with the reports of the parliamentary committees of 1797 clearly revealing the co-existence of the two facts even tho not demonstrating any causal relation, Boyd invoked the same principle of variation in currency supply, in reverse application, to explain the increase in prices. But that which, with respect to the fall of prices in 1797, Boyd had defended as "partiality for a favorite doctrine," at best "confirmed by the general conviction, which arose from the labors of the Committees of both Houses of Parliament," — he now enunciated, with respect to the rise in prices in 1800 as "a principle universally recognized" as "invariable in its operation, as the law of gravitation." This principle, in its particular application, was "there is the highest probability that the increase of Bank Notes is the principal cause of the great rise in the price of commodities and every species of unchangeable value," and that "the one is, to certain degree, the inevitable consequence of the other." In its more general form it became a clear enunciation of the quantity theory: "the augmentation of the quantity of money, or paper performing the functions of money, in a country, has a tendency to depreciate that money or paper." In actual analysis Boyd was, however, obliged to rest his theory that the rise in prices was due to an increase in the Bank's issues upon what he himself termed "presumptive evidence." At the time the pamphlet proper was written, no public statement of the amount of bank-notes in circulation had been made for a date later

than February 26, 1797, and, omitting the hypothesis that Boyd had some private information as to the conduct of the Bank — as indeed he might very possibly have had — the pamphlet in its vigor and confidence is a remarkable piece of inferential reasoning.

Boyd examined in turn the specific causes that had been advanced in explanation of the rise in prices, namely, the real scarcity of grain in consequence of scanty crops, the monopolizing of grain by forestallers and regraters, the great increase in the population of the country and the effect of the war, and denominated them all partial causes incapable of producing a general effect. On the other hand, it appeared that since February 26, 1797, the Bank of England had enjoyed the power of issuing notes without being obliged to pay them; that it was manifestly to the advantage of the Bank to extend its issues; and that the joint effect of such "a positive degradation of the standard, and of a probable augmentation of the quantity of money in the country" would be amply sufficient to account for as considerable a rise in prices as had actually taken place. Boyd fortified his conclusion that the rise in prices was in reality a depreciation of paper, due to relative over-issue, by citation of two positive facts: (a) the premium on gold bullion in the open market, equivalent to $9\frac{1}{8}$ per cent; and (b) the unfavorable character of the foreign exchanges, representing a difference of nearly 9 per cent. He referred in the most positive terms to these two phenomena as the invariable even tho not exclusive symptoms of a relative over-issue of paper:¹

It is not merely because foreign exchanges are against us, or because bullion is very high, that I suspect there has been a great addition made to our currency (as there unquestionably has been

¹ Letter to Pitt, pp. 31-32.

an important change in its composition) but finding these strong symptoms, in common with so many others, I am fully warranted to ascribe them to the same great and general cause. An unfavorable exchange, and a high premium on bullion have existed, and may occasionally exist, from causes not only altogether different from that to which I now attribute them, but of a contrary tendency; yet so inseparably are they connected with an excess of paper-currency, that such excess cannot possibly exist without being accompanied by them. If all the other symptoms of that supposed excess had existed, and our exchanges and bullion had remained unaffected, for any considerable time, I should have doubted the truth of my theory.

Boyd's pamphlet was written early in November, 1800, but was not actually published until two months later. In the interval, the unfavorable exchange with Hamburg had risen from 9 per cent to 14 and the premium on gold had increased to something more than 10½ per cent. Moreover, by the return to an order of the House of Commons, it appeared that the amount of bank-notes in circulation on December 6, 1800, was £15,450,970, which exceeded the sum in circulation in February, 1797 (£8,640,250), by nearly four-fifths of that circulation. Boyd incorporated these facts in a preface to his pamphlet as finally published, and they served in considerable degree to justify its argument and to extend its influence.

The "Letter to Pitt" elicited various rejoinders, and Sir Francis Baring again became conspicuous as the vigorous but ineffectual champion of the Bank's policy.¹ Assenting in the main to the "well understood and universally admitted" principles enumerated by Boyd, and characterizing the quantity theory as "no new discovery" but "the alphabet or first principle of every financier and merchant for above a century,"

¹ Observations on the Publication of Walter Boyd, Esq., M. P. (1801). In the anonymous Brief Observations on a late Letter addressed to the Right Hon. W. Pitt, by W. Boyd, Esq. (1801), disapproval of Boyd's doctrines was mingled with resentment at their publication "in the present critical situation of the country."

Baring asserted that the confidence reposed in the paper of the Bank of England "was, and is, unshaken and complete," and that the Bank's circulation had never been of such volume as to produce a high level of prices.

As a result of the controversy all of Boyd's essential contentions may be said to have been established. The generally accepted connection between the supply of money and the range of prices was brought afresh to the public mind. The fact of a large and abrupt increase in the Bank's paper was made clear, and the principle that a rise in the price of bullion and a fall in the foreign exchanges were inevitable symptoms of an excess of paper currency, was enunciated with clearness and emphasis.¹

The vogue of Boyd's pamphlet and the popularity of its proposals² were heightened by the course of external events. In 1802 the Peace of Amiens was concluded and the Bank seemed ready to resume specie payments. But Parliament extended the Restriction until March 1, 1803, and almost at the same time judicial decision was rendered that bank-notes were not legal tender, and that gold might be demanded in redemption of a country bank-note.

It was natural that the Bank's policy of continued restriction should require new defence,³ and in 1802

¹ In the Third Report of the Commons Committee of Secrecy (April 21, 1797; see *Parliamentary History*, vol. xxxiii, 441), in the Lords Report on the Affairs of the Bank (April 28, 1797; see *ibid.*, vol. xxxiii, 449), and in the Commons Report on the State of the Bank (November 15, 1797; see xxxiii, 1026) — the state of the exchanges had been discussed in connection with the Restriction, but no definite theory had been set forth. Similarly Tierney, in debate, had said "whether the course of exchange be unfavourable or favourable," the Restriction would be continued (*ibid.*, vol. xxxiii, 1032).

² See the Earl of Suffolk's speech in the House of Lords upon the motion respecting the paper currency of country banks (*Parliamentary History*, vol. xxv, 1264).

³ In *Considerations on the propriety of the Bank of England resuming its payments in specie at the period prescribed by the act 37th, George III (1802)*, Jasper Atkinson

appeared Henry Thornton's "Paper Credit."¹ The author, like Francis Baring, was one of the most substantial and respected figures in the financial world. A member of Parliament from Shrewsbury for twenty years past, a proprietor and governor of the Bank, Thornton's position in the community was as "the representative of business among a group which, though small, was a marvellously well-equipped body of men, and of whom W. Pitt was the most prominent."²

Thornton's original purpose was "merely to expose some popular errors which related chiefly to the suspension of the cash payments of the Bank of England, and to the influence of our paper currency on the price of provisions." But he succumbed to the ordinary temptation of the man of affairs in economic controversies, and eventually published a book of some three hundred pages. Poorly arranged, awkwardly expressed, — for Thornton, like Ricardo, probably spoke better than he wrote, — sometimes obscure and always prolix, Thornton's work was a conscientious attempt to harmonize accurate detail and sound theory with practical bias and unsafe conclusion. His long experience in the money market, his intimate acquaint-

(whose authorship appears from his Letter to a member of Parliament, 1810, p. 1), had presented a turgid vindication of the Bank's conduct braced by a denial of the fact of inflation and a proposal that the mandatory date of resumption be extended with discretionary power on the part of the Bank to act in the interval. The *Utility of Country Banks Considered* (1802) — a tract which McCulloch praised highly and reprinted in the *Overstone Tracts on Paper Currency* — contained many interesting details of the economic usefulness of the interior banks but repeated almost verbatim Adam Smith's theory of the automatic limit upon paper circulation. Guineas an unnecessary and expensive incumbrance on commerce; or, the impolicy of repealing the Bank restriction bill considered (1802; 2d ed., with appendix, 1803) was a pretentious advocacy of paper circulation, anticipating the cheapest sophistry of the later restrictionists.

¹ *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain* (1802).

² Palgrave, *Dictionary of Political Economy*, sub Thornton.

tance with economic writing, and even his intellectual keenness and logical force were handicapped by his partisan espousal of the cause of the Bank and his unqualified defence of its past policy and present conduct. He might have produced either a valuable treatise on the theory of money, or a telling pamphlet on the Restriction controversy. But in attempting to do both, he failed in a measure to accomplish either.

Yet withal, Thornton's work was notable, if not for the practical conclusions which it deduced, for the information it conveyed and the theories it formulated. The mechanism of commercial credit, the technique of foreign exchange, the procedure of the Bank were described with a fullness of detail and an intelligence of interpretation novel to the economic writing of the day. Francis Horner selected it for his initial review in the first number of the newly established *Edinburgh Review* in October, 1802, and appraised it as "the most valuable unquestionably" of the publications occasioned by the Bank Restriction. Huskisson declared, "In this work . . . the reader will find the true principles of political economy united with the practical, I might almost say hereditary knowledge of a well informed merchant, and the extensive experience of a great London banker."¹ Even two generations later John Stuart Mill declared it "the clearest exposition that I am acquainted with, in the English language, of the modes in which credit is given and taken in a mercantile community."²

Accepting the main outlines of Adam Smith's exposition, with occasional use of Hume, Locke, and Sir

¹ *The Question concerning the Depreciation of our Currency stated and examined* (1810), p. 100, note.

² *Principles of Political Economy* (1848), Book III, chap. xi, §4, note.

James Steuart,¹ Thornton attained a general theory of paper credit by the correction and addition of particulars, in much the cautious manner in which revised economic theories emerged in the early nineteenth century from out the commanding authority of the "Wealth of Nations." He insisted that rapidity of circulation as well as positive amount were factors in the money supply, and for this as for other reasons it was incorrect to assume that there is a certain fixed quantity of paper, supplying the place of gold, which is all that "can easily circulate or that should ever be allowed to be sent into circulation." He made clear that an excessive issue of paper would lead to an export of gold, not by Adam Smith's vague overflow of the "channel of circulation," but by a precise and regular mechanism of rising prices, unfavorable exchanges, diminishing exports and increasing imports. Finally he definitely associated the state of the foreign exchanges with the market price of bullion as the absolute test of the value of paper currency: "It is the maintenance of our general exchanges, or, in other words, it is the agreement of the mint price with the bullion price of gold which seems to be the true proof that the circulating paper is not depreciated."² With these modifications, Thornton recognized that successive additions of paper to a currency — assuming no increase in trade to absorb the excess — would raise general prices and displace equivalent portions of gold, until the circulation consisted entirely of paper. Thereafter, if the quantity of notes should continue to be successively increased, the prices of

¹ Boyd's contribution, altho surely familiar, was dismissed with such incidental comment as might be expected from a Bank governor, a colleague of Baring and a champion of Pitt.

² Paper Credit, p. 191.

commodities would continue to rise, exports to decline, foreign exchange to fall, and an excess to appear in the market price above the mint price of gold.

The clear and logical inference from Thornton's principles, with respect to the Bank's past conduct and present position, was that the Bank had come to grief in 1797 by an imprudent reduction of the bullion reserve, that the recurring high price of bullion and fall in foreign exchange since the Restriction were due to an excessive issue of paper, and that the remedy lay either in a reduction of the Bank's notes to a point where these evils would disappear, or in compelling the Bank to resume gold payments. But from these necessary conclusions Thornton shrank, and indeed phrased his dissent in no uncertain tone. He asserted that the Restriction had been brought about neither through the recklessness of the Bank's administration nor the cupidity of the Government, but that it was the unavoidable consequence of an unfavorable balance of trade, aggravated by a sudden alarm of foreign invasions. He added that the subsequent drain of gold was attributable to unfavorable foreign exchanges, "produced partly by our heavy expenditure, though chiefly by the superadded circumstance of two successively bad harvests." He denied that the Bank had materially and unwisely increased its paper issues since the Restriction. He insisted that the prosperity of the nation required that the circulation of the country be maintained at a certain amount and he concluded that any further contraction of bank-notes designed to correct the high price of bullion and the unfavorable exchanges was certain to produce more harm than good.

Much of the obscurity and all of the prolixity that clouded Thornton's work were eliminated in the

version in which it attained its greatest vogue and exerted its largest influence — Francis Horner's expository review in the first number (November, 1802) of the *Edinburgh Review*. "The analysis of Thornton cost me a considerable degree of trouble; but this labor has served to break up the ground in one of the most necessary fields of political economy," Horner wrote in his journal in September, 1802, and added that he had given the review to the press in a very rude form, altho his aim had been to mold the irregular materials of the original work into a useful arrangement. However short of its author's ideal the review may have fallen, it succeeded in laying before an influential public a succinct statement of the theory of paper money and an accurate description of the existing credit mechanism, and at the same time suggested that which it did not expose, — the defects in Thornton's explanation of the influence of the existing paper currency upon the actual state of prices.

The Treaty of Amiens was concluded in April, 1802, and the Bank professed readiness to redeem its notes forthwith. But the shadow of an insecure peace hung over England and in the very month in which the definitive treaty was signed, Addington, alleging political expediency as its prime justification, carried through a bill for the continuation of the Restriction until March 1, 1803.¹

By the end of January, 1803, the hope of averting the rupture with Napoleon had gone,² and a fortnight later the Government moved for further continuation of the Restriction. This time the debate was distinctly reactionary. The Chancellor of the Exchequer

¹ *Parliamentary History*, vol. xxxv, 541.

² Smart, *Economic Annals of the Nineteenth Century, 1801-1830* (1910), p. 64.

insisted that a period of unfavorable foreign exchange prevented resumption, and even Thornton agreed that "the Bank could not with safety be opened unless the exchange was favorable to this country." Tierney filed a mild caveat, declaring with some justice that "no other ground was laid for the present motion, but that the exchange with Hamburg was at par." Fox contended that "as long as our currency continued bad, the exchange was against us," and proposed a committee of inquiry.¹

A much more effective stand in opposition was taken by Lord King in the House of Lords.² In a strong speech of protest, bristling with striking facts and sound arguments, he insisted that "from the time the restriction was first imposed, the course of exchange began to turn against this country in various proportions to the quantity of paper in circulation."³ Two months later the debate on the Irish Bank Restriction Bill afforded Lord King opportunity for explicit reiteration of his opinions, centering in the contention that the extraordinary increase in the Irish Bank's circulation "was the circumstance which sufficiently accounted for the balance of trade being so unfavorable."⁴

In the late spring of 1803, Lord King published the substance of what he had sought to impress upon Parliament, in "a more correct and extended form," — a loosely printed pamphlet of less than a hundred pages, bearing the title "Thoughts on the Restriction of Payments in Specie at the Banks of England and

¹ *Parliamentary History*, vol. xxiv, 1149, 1155.

² The Earl of Moira alone concurred with Lord King; Pelham and Sheffield echoed Addington.

³ *Parliamentary History*, vol. xxv, 1157.

⁴ *Parliamentary History*, vol. xxiv, 1247.

Ireland.”¹ In both form and content Lord King’s pamphlet was a remarkable contrast to the prolix obscurity of Thornton’s essay, and the heated temper of Boyd’s performance. Clear and concise in expression, restrained and dispassionate in spirit, persuasive in argument and conclusive in evidence, the “Thoughts on the Restriction” was fitted to become, as it speedily did, the epitome of what had already been written in sound criticism and in reasonable interpretation of the Bank’s course, no less than the inspiration of future effort in the same direction.

Starting out by showing the error of Adam Smith and earlier writers in contending that the circulating medium of a country should form a definite percentage of its wealth, and making clear that a paper circulation could not be determined in proper amount either by sound commercial discounting or by mere banking solvency, Lord King summarized his further argument succinctly. The use of paper money is justifiable only if it serve as a just medium of exchange. This involves that it be exactly equivalent to that quantity of the precious metals which would otherwise be employed for such purpose. To preserve this equivalence a paper currency must be “immediately and unconditionally convertible into specie” — failing which it is in constant danger of being depreciated by excessive issue. A depreciation of currency produces a corresponding effect upon all exchanges and prices. But general prices are subject to serious variation from

¹ As late as 1877 Francis A. Walker assented to Senior’s opinion that, “It contains so full and, in the main, so true an exposition of the theory of paper money, that after more than forty years of discussion, there is little to add to it or correct” (*Money*, p. 353). A “second edition enlarged, including some remarks on the coinage,” was published in 1804 under the title *Thoughts on the Effects of the Bank Restrictions*, and was included (pp. 47-161) in Earl Fortescue’s edition of *Lord King’s Speeches and Writings* (1844). The original edition, like Thornton’s *Paper Credit*, was reviewed by Francis Horner in the *Edinburgh Review* (July, 1803).

many causes. Hence the market price of bullion and the state of foreign exchanges may be selected "as furnishing in conjunction the most accurate criterion of the pure or depreciated state of a currency." If the depreciation be considerable, it must in all cases be clearly discovered by these tests.¹

More notable even than the clearness and force with which Lord King enunciated the theory of paper money was the wealth of convincing detail with which he fortified his theory and confirmed its application to contemporary monetary events. He collected and presented in parallel columns the rates of exchange upon Hamburg, Paris, and Dublin, and the market price of standard silver, month by month from 1789 to 1803, together with the amounts of outstanding bank-notes of the Banks of England and Ireland respectively, as reported quarterly from 1797 to 1803, all designed to show that "the advance in price of bullion and the depression of the exchange have corresponded in a very remarkable degree with the increased amount of Bank notes since the restriction of payments in specie." He called attention to the fact that the course of exchange with Lisbon and Dublin had been much in favor of London, tho at the same time in a most unfavorable state with Hamburg and other parts of the Continent. In explanation he added that on the one hand the currency of Lisbon had been for some time composed of a paper circulation issued by the Portuguese Government during the

¹ "This great law which we have designated Lord King's Law of Paper Money, because he bore the most conspicuous part in establishing it" (Macleod, "Banking in England" in *Banking in all Nations*, 1896, vol. II, p. 20). Elsewhere Macleod asserts that it is to Boyd, Lord King, and Thornton, that "the merit is due of establishing this principle, which is as important in the subject of currency as the Newtonian law of gravity is in astronomy" (*Theory and Practice of Banking*, 2d ed., 1866, vol. II, p. 4); and in still another connection the same writer hesitates as to "whether strict justice does not demand that it should be attributed to John Law" (*Dictionary of Political Economy*, 1863, p. 96).

late war; and that, on the other hand, during the period in which the issues of the Bank of England had increased one half, the issue of the Bank of Ireland had quadrupled, and that the currency of Dublin, consisting of notes of the Bank of Ireland, was depreciated in much greater degree than the currency of England. He invited attention to such significant facts as that the difference between the currencies of Dublin (exclusively Bank of Ireland notes) and Belfast (specie or the notes of private bankers payable in specie) had produced an actual exchange between the two places in favor of the latter. And he reminded by specific examples that an unfavorable balance of trade could never occasion any greater difference in the state of the exchange above par than would defray the cost of exporting bullion.

In November–December, 1803, the Government, with the prospect of a long war, moved for a further continuation of the Restriction for a period subsequently fixed as six months after the conclusion of a definitive treaty of peace. Debate in the House of Commons was perfunctory. But in the Lords more spirit was shown, and a little later, in connection with the proposal to extend the restriction to the Bank of Ireland, discussion under the leadership of Lord King reached a new level of candor and discernment. Naturally enough the extravagant performances of the Irish Bank received chief attention, and one practical result of the debate was the appointment in the spring of 1804 of the committee "to inquire into the State of Ireland, as to its Circulating Paper, its Specie, and Current Coin, and the Exchange between that Part of the United Kingdom and Great Britain."

The Committee examined some twenty witnesses

and presented to the House in June, 1804, a carefully prepared report with minutes of evidence and statistical appendices.¹ Macleod characterizes the Irish Report as "one of the great landmarks of Political Economy," and declares that "in the main subject of its inquiry, and the principal doctrines it lays down," the Irish document anticipates the more famous Bullion Report of six years later.² Even tho it fall short of this estimate, the Irish Report, both in spirit and in content, was an important and influential record. It established the fact and set forth the extent of the unfavorable exchange between London and Dublin. It stated in the clearest manner that the cause of the unfavorable exchange was the unlimited and over-abundant issue of notes by the Bank of Ireland and their consequent depreciation, and that this in turn had been made possible "by releasing the Bank from performing their engagements, and by taking away from them the former criterion, namely the diminution of their Gold, which they were accustomed to look to for judging when their Paper became excessive." For the correction of these evils, "the great and effectual remedy" would be "the Repeal of the Restriction Act from whence all the evils have flowed"; but inasmuch as the sudden adoption of such a course would under existing conditions involve the Irish banks in extraordinary expense and difficulty, the Report recommended that the Bank of Ireland be obliged "to give Bank of England Notes in exchange for their own on demand, or to make their

¹ Report, Minutes of Evidence, and Appendix, from the Committee on the Circulating Paper, the Specie, and the Current Coin of Ireland; and also, on the Exchange between that Part of the United Kingdom and Great Britain (May and June, 1804; reprinted May, 1826).

² Dictionary of Political Economy (1863) sub. Banking Works and Bullion Report; Sumner's opinion is similar, see History of American Currency (1884), p. 263.

own exchangeable for them in London, or to give Bills of Exchange on London for them." In even more emphatic terms the Report registered the opinion that even with such provision "it is incumbent on the Directors of the Bank of Ireland, and their indispensable duty, to limit their Paper at all times of an unfavourable Exchange during the continuance of the Restriction, exactly on the same principle as they would and must have done in case the Restriction did not exist; and that all the evils of a high and fluctuating Exchange must be imputable to them if they fail to do so" — it being understood that any reduction of outstanding paper be done "cautiously and gradually."

A month before the appointment of the Irish Committee, Henry Parnell, a member of the Irish parliament since 1797 and the representative of Queen's County in the first united parliament, published his "Observations upon the State of Currency in Ireland and upon the Course of Exchange between Dublin and London."¹ Parnell's pamphlet was a graphic and convincing application to Irish currency affairs of the theories enunciated by Thornton, Horner, and King. Of these the influence of Lord King's "Thoughts" was paramount. Parnell made uncontrovertibly clear, with respect to the Bank of Ireland, the facts of an automatically regulated note issue prior to the Restriction, of a relatively excessive emission since that time, of a depreciation of paper attested by the premium on gold, by the unfavorable foreign exchanges, and the discount on paper. Interpreting these conditions in the spirit of Lord King's principles, Parnell brought specific charges against the Bank of England "of inundating the country with its paper; of di-

¹ London and Dublin, 1804.

minishing the value of the greatest portion of the property of the country; of establishing a ruinous rate of exchange; and of bringing upon the state all the calamities attending a depreciated currency." As an effective but conservative remedy for the Bank's power of "fixing the assize of property," Parnell urged Lord King's proposition that the Bank of Ireland be obliged to convert its notes, on demand, into Bank of England paper, thus entailing a gradual diminution of the quantity of Irish paper in circulation, an improvement of the exchanges, and a reduction of the premium on gold.

Altho Parnell's primary concern was with the local circumstances of Irish currency and exchange, he insisted that the conclusions contributed "much to explain the science of currencies in general, and to corroborate the opinions of those who maintain that the currency of England is depreciated." He refuted the "ministerial argument" that the continuation of the restrictions was necessary, in view of unfavorable exchanges with the continent, to prevent gold from being taken out of circulation and exported, and he urged the removal without delay of "the origin of all the evils which are complained of, and are still to be apprehended." A month later Parnell's argument and conclusion were confirmed by the publication of the House Committee Report, and a summary of the evidence was appended to the third edition of his essay.

The presentation of the Irish Report was the occasion of a further series of controversial pamphlets, the most ambitious being John Leslie Foster's "Essay on the Principle of Commercial Exchanges, and more particularly of the Exchange between Great Britain and Ireland: with an inquiry into the Practical Effects of

the Bank Restrictions."¹ The author, a young Irish barrister who had removed to London and had been admitted to Lincoln's Inn, undertook to examine the system of commercial intercourse between Great Britain and Ireland and as preliminary thereto "to establish fixed and general principles on the subject." As compared with Thornton, King, and Parnell, Foster's paper was prosy, wearisome, and didactic. All his theory was derived from King and all his data had already been used by Parnell. But his very crass didacticism served to emphasize certain sound principles by sheer reiteration: an unfavorable balance of trade cannot explain a continuous unfavorable exchange; an excessive issue of currency is comparable to a debased or seigniorage-charged currency; a metallic currency can never remain excessive, by reason of efflux; an inconvertible paper currency is likely to become excessive; sound discounting of commercial paper is no adequate precaution against over-issue; a premium on gold, a discount on paper, and a continuous unfavorable exchange are infallible symptoms of an excessive and therefore a depreciated currency. Like Parnell, Foster insisted that the reduction of the amount of currency would effect the correction of an unfavorable exchange and would constitute the remedy for its depreciation; he urged the legal requirement to redeem its notes in Bank of England paper as the proper corrective of the Bank of Ireland's condition.²

¹ London, 1804.

² So too, in *Thoughts on the Alarming State of the Circulation, and on the Means of Redressing the Pecuniary Grievances of Ireland* (1805), the Earl of Lauderdale placed himself in emphatic agreement with the contentions of the Irish Report that the unfavorable exchange and the premium on gold were proofs of the depreciation of the Bank of Ireland's notes, and that excessive issue was the sole cause of such depreciation; going farther than the half-hearted palliatives of the Report, Lauderdale insisted that the reduction of the quantity of Bank paper was the only remedy for the existing evil.

Neither the Irish Report nor the controversy that it provoked resulted in legislation and the actual improvement in the Irish circulation grew out of the more discreet conduct of the Bank of Ireland.

Boyd, Thornton, Lord King, Foster, and Parnell — even Lord Liverpool and the Earl of Lauderdale — wrote as tractarians and pamphleteers. The nearest approach¹ in the period from 1797 to 1809 to an independent expositor of monetary principles was John Wheatley of Shrewsbury. Lightly regarded by contemporaries, completely ignored by successors, the barest details of Wheatley's personal life have been forgotten. His name does not even appear in the "Dictionary of National Biography," and so diligent a student as J. D. Rogers has been obliged in an interesting appreciation in Palgrave's "Dictionary of Political Economy" to dismiss his biography in a parenthetical "fl. 1803-1822."²

Wheatley's title to distinction in the development of monetary theory rests upon two works. The first of these, "Remarks on Currency and Commerce," a loosely printed octavo, was offered to the public in 1803, in the train of Thornton's "Paper Credit" rather as "the prospectus of a future work than as a distinct treatise." The more ambitious "Essay on the Theory of Money" saw light four years later as a dignified quarto of some 380 pages, with a second volume then

¹ Despite its pretentious title, Thomas Smith's *Essay on the Theory of Money and Exchange* (1807; 2d ed., 1811) was a dull defence of the Restriction, evoked by the Irish Report, and of interest solely for the extravagance of its expressions ("the Restriction Bill was one of the wisest acts that ever was passed; . . . if the Directors have erred at all, it has been in issuing too few Notes.") The book was reviewed by James Mill in the *Edinburgh Review* of October, 1808, and indirectly influenced the subsequent course of monetary discussion (cf. Hollander, David Ricardo, 1910, p. 44).

² Of modern writers on money, Professor H. S. Foxwell has in various places recognised Wheatley's doctrinal importance.

promised but not actually realized until 1822, and then only as a reflex of new controversies.¹

In literary manner Wheatley was ponderous, archaic, and prolix, suggesting the stilted formalism of Sir James Steuart in striking contrast to the crisp readableness of his pamphleteer contemporaries. As critic he was unsympathetic and acrid, his estimates of men and doctrines being often hypercritical and sometimes vitriolic. But his theory of money was positive and explicit, its fundamental doctrine being enunciated not as an incident to or corollary of any general discussion, but as a central, dominating principle. Upon it he based all his criticisms of earlier monetary opinions and from it he derived all of his practical proposals.

Taking up the thread, with a characteristic disregard of intervening writers, virtually at the point at which Adam Smith had permitted it to drop, Wheatley insisted that in the commercial intercourse between nation and nation money is "the measure of equivalency," that is, its value or general purchasing power is everywhere identical — subject only to the friction of conveyance costs and trade restrictions.² It is to this "great principle of the level of money," that we must turn for the solution of "almost every other mystery in which the science of financial economy has been hitherto involved."³

The value of money in any one country being determined by its amount, the greater the quantity in circulation the lower will be its standard and the higher will be the price of all things. Accordingly it follows: ⁴

¹ A part at least of this second volume was sent by Wheatley to Ricardo, and Ricardo's acknowledgement (*Brit. Mus. Add. mss. 20,764, f. 44*) is reprinted in Bonar and Hollander (ed.), *Letters of Ricardo to Trower* (1899), pp. 159-160.

² *Essay*, pp. 45-46.

³ *Ibid.*, p. 97.

⁴ *Ibid.*, p. 48.

that no one nation can possess a greater or less currency than its due proportion, than that proportion which is competent to circulate its produce at par with other countries; that in whatever instance it should be augmented above this proportion, foreign produce would be attracted by the advance in its market, and take off the surplus currency; that in whatever instance it should be reduced below this proportion, foreign bullion would be attracted by the cheapness of its market, and supply the requisite addition; and that no permanent variation can be effected in the value of money to prevent its universal agency as a common measure of equivalency.

High prices in a particular country are therefore a passing phenomenon; universal high prices are in reality only a test that the aggregate currency of the world has increased in a greater proportion than its aggregate produce.¹ The course of exchange registers the relative value of money in different countries. If all countries could at all times accurately employ the several amounts necessary to preserve uniform correspondence in respective prices, the exchange between them would invariably be at par. The fact that the course of exchange departs from par, at least by a greater margin than is represented by the expense of transit, indicates a disproportionate increase in the local currency and a depreciation in its value.

If such relative excess of currency be caused by the accumulation of specie, the course of exchange becomes unfavorable, and by leading to the efflux and distribution of the surplus specie, it maintains inviolable the level of money.² If the excess be due to an over-issue of bank-notes convertible into specie at the option of the holder, the course of exchange causes its return to the banks till the equivalence of money value is restored. So long, therefore, as the currency of a nation consists of a paper convertible

¹ Essay, p. 51.

² Essay, pp. 66-67.

at option into specie, no permanent excess can be effected; as the course of exchange will invariably prevent any given amount, expressive of a given sum, from measuring less value than the same sum in other countries, and will present an insuperable bar to its increase beyond the correct proportion.¹ But if the paper of a country be not convertible into specie at the option of the holder, and a relative excess of currency ensue from its over-issue, being neither like specie qualified for exportation, nor like paper convertible into specie obnoxious to a forced contraction, the course of exchange has no other means of causing the same sum to express in that country the same value which it expresses in others, than to reduce it to a discount in proportion to its excess.

More than this, a premium on gold was associated by Wheatley with a fall in the exchanges as an unmistakable symptom of the fact of monetary depreciation and the measure of its extent:²

the price of a foreign bill was an accurate criterion of the value of money in the country upon which it was drawn, and distinctly demonstrated to what extent a given sum abroad would purchase a greater quantity of produce than a similar sum at home. Specie, therefore, would bear a premium commensurate with the premium on a foreign bill, and no longer participating in the degraded condition of the paper, would resiliate to its level, and be maintained at the same value with the value of money in other countries.

Wheatley's practical proposals for the correction of prevailing monetary ills — the withdrawal of issue powers from the country banks and the redemption of the Bank of England's notes of less than £5 denomination — were distinctly feebler than his theoretical analysis, and this is doubtless the real explanation of his minor rôle in subsequent currency debate.

¹ Essay, p. 69.

² Essay, p. 70.

But the effect of his theoretical writing was, by fulness of detail and sequence of argument, to establish that which he contributed as well as that which he merely restated. From 1807 on, the propositions (a) that the normal supply of a country was the amount which would keep its price level on a par with that of other countries, (b) that any addition effected redundancy and depreciation, (c) that the proof and measure of such depreciation was the fall in the foreign exchanges and the premium upon gold bullion, (d) that inconvertible paper would circulate without depreciation and concurrently with specie, if the aggregate amount of such paper and specie did not exceed the normal monetary supply — could be described as definite and familiar monetary doctrines.

In the two years from 1807 to 1809 currency discussion was again relatively inactive. The Bank, in part restrained by the temper of parliamentary debate and the quality of public opinion, in part affected by the coincidence between its rate of discount and the market rate of interest, followed a policy at first such as it might have adopted in a period of cash payments. But new conditions were preparing. The close of 1807 found England not only excluded by the events of the war from commercial intercourse with continental Europe, but limited by orders in council and non-intercourse acts and embargoes in trade with the United States. The reduction and in some cases the total failure of foreign supplies were aggravated by a succession of unfavorable seasons and deficient crops, resulting in a rapid advance of prices and feverish speculation and hazardous over-trading. The extravagances of South American trade in 1808 and the tempting gains of contraband trade with conti-

mental ports attracted a host of speculative adventurers and gave a reckless tone to the whole English world of commerce.¹

In the financial field the results were those inevitably attendant upon highly speculative periods — “ a great briskness in the general circulation; a rapidity in the interchange between goods and money or credit ”; an increase of credit transactions; an enlargement of private country bank paper, and an extension of Bank of England notes.² The Bank expanded its issues uninterruptedly through 1808 and 1809, the total circulation increasing from £17,467,170 in November, 1808, to £18,646,880 in May, 1809, to £19,811,330 in August, 1809. The Hamburg exchange fell from 30*s.* 8*d.* in January, 1809, to 27*s.* 8*d.* in December, 1809, and the price of gold bullion fluctuated from £4 9*s.* to £4 12*s.* per oz. — the market price at £4 10*s.* being about 15½ per cent above the Mint price.³

These were conditions certain to attract attention anew to currency matters. On August 29, 1809, Ricardo appeared as an earnest but timid contributor of an unsigned paper on “ The Price of Gold ” to *The Morning Chronicle*. Comment elicited response, and further criticism excited rejoinder — culminating in the publication early in 1810 of Ricardo’s tract on the “ High Price of Bullion, a Proof of the Depreciation of Bank Notes.” With it the development of monetary theory entered, in external form at least, if not in doctrinal content, upon a new stage, the study of which lies beyond the scope of the present paper.

¹ Tooke, *History of Prices* (1838), vol. i, p. 273 et seq.

² Tooke, *Thoughts and Details on the High and Low Prices of the last thirty years* (1823), p. 103.

³ Report, together with minutes of evidence, and accounts from the Select Committee on the High Price of Gold Bullion (1810), pp. 1, 189, 207.

IV

A final question remains to be considered: why should the phase of monetary theory, whose development has thus been reviewed, figure in the history of economic thought as a distinctively "Ricardian" doctrine? It would appear that parallel with the course of monetary events from 1776 to 1810 ran a current of criticism and comment tending more and more to clear understanding and exposition, and that what are commonly regarded as Ricardo's important currency contributions were neither new and independent analyses of contemporary monetary events, nor fresh deductions from general economic principles.

As a matter of fact, Ricardo's early currency pamphlets represent a discriminating acceptance of prevailing monetary theories, made precise by faultless logic and intimate knowledge of monetary affairs, and made forcible by an effective literary manner. There was little in the positive content of the "High Price of Bullion" that had not been said before and even said better. The theory of the distribution of the precious metals had been successively presented by Locke, Hume, Steuart, Foster, and Harris. The theory of inconvertible paper money and "the unerring tests" of inconvertibility had been made clear by Lord King and John Wheatley, and Ricardo undertook indeed to "add but little to the arguments which have been so ably urged"¹ by the former vigorous writer. The policy of the bank had been arraigned with varying emphasis by Boyd, Horner, Thornton, Foster, and Parnell, and Ricardo's expressions only renewed and confirmed such judgments.

¹ *High Price of Bullion* (1810), Introduction.

The clear forcible restatement of these theories, in association even tho not in sequence, together with the admirable illustrative and confirmatory equipment which the monetary events of the latest years afforded, the unequivocal form in which legislative termination of the Restriction was urged as the remedy for existing disorders — would have made Ricardo's performance, emanating as it did like Baring's, Boyd's, and Thornton's writings from a distinguished member of the financial community, an interesting, even a notable tract of the times. But it is unlikely that there would have been other results than this.

It is to the controversial paragraphs, the most characteristic parts of the essay — and even more, of its sequel, the "Reply to Bosanquet" — that we must turn to appreciate the larger influence exerted by Ricardo's tracts, as compared with the work of predecessors and contemporaries. It was because, not content with restating a positive theory, Ricardo set up in succession and demolished in turn, sometimes completely, always plausibly, every opposed argument in written criticism or current opinion, that the doctrines of the "High Price of Bullion," reiterated and amplified a few months later in the report of the Bullion Committee, were associated thereafter in exclusive authorship with the name of Ricardo. A theory which had a dignified parentage was refurbished, defended from doctrinal attacks, justified by contemporary events, vitalized by urgent timeliness, and vindicated against current criticism. A standard was planted, the field cleared, and an alert and resourceful champion held the lists.

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RAILWAY RATE THEORIES OF THE INTER-STATE COMMERCE COMMISSION. III.

SUMMARY

VI. Competition (*continued*), 471. — 4. Export rates, 471. — 5 Competition between producers, 492. — 6. Competition to prevent a transportation monopoly, 497. — VII. Class and sectional interests, 501. — 1. Domestic versus foreign producers, 503. — 2. Vested interests, 504. — VIII. Fair return on investment, 513. — 1. Development of the theory, 514. — 2. Rates in general, 516. — 3. Particular rates, 524. — IX. General summary and conclusions, 528. — Essential points in a theory of government-regulated rates, 535.

VI. COMPETITION (*continued*)

4. *Export rates*

Two questions are raised in connection with this interesting group of cases: (1) Do carriers serving different seaports have a right so to adjust their rates as to promote the export trade of the ports served by them? (2) If this is done, is the carrier thereby placed under obligation to grant the same rates on goods carried to these ports for domestic consumption as it gives to the export traffic?

In attempting to answer these difficult questions the Interstate Commerce Commission has had to consider a vast amount of evidence and listen to many able arguments presenting various views as to the principles involved. Its own conclusions show the influence exerted on the minds of the Commissioners by these opposing arguments and conflicting testimony, and make it difficult for the analyst to discover the leading principle involved in the final decision. Yet, throughout all the reasoning

of the Commissioners, there is evident a desire on their part to preserve competition between the various ports and between the carriers leading to these ports, and also to make it possible for American producers to meet the competition of foreigners in the over-sea market. We may, therefore, without much hesitation, treat these cases under the heading of competition.

The questions just presented first came before the Commission shortly after its organization in the shape of a request¹ for its decision as to whether or not it was illegal "for railroad companies connecting Boston with western points to make the rates from such points to Boston upon grain and provisions for export as low as the rates to New York, altho the rates upon like property for local consumption are higher to Boston than to New York, the distance being somewhat greater." The Commissioners rendered no formal decision in the matter but informally replied that it was not illegal. The desire to preserve competition between the two ports with reference to the export trade of the country was the reason given for this informal opinion.

Not long after this a formal hearing was given to a case brought before the Commission² in which that body was asked to grant an order compelling the defendant carriers to make as low rates on goods sent to Boston for domestic consumption as they gave on the same traffic when taken to New York. The contention was that since equal rates were given to the two cities on goods intended for export and it cost no more to haul goods for domestic consump-

¹ *In re Export Trade of Boston*, 1 I. C. C. Rep. 24.

² *Boston Chamber of Commerce v. L. S. & M. S. R'y Co. et al.*, 1. I. C. C. Rep. 436.

tion than when they were to be exported, the two cities should have the same rates on their domestic traffic. We have already seen¹ that the Commission denied this plea on the ground that the natural advantages possessed by New York entitled her to lower rates on goods intended for domestic consumption.

The next case to bring these questions before the Commission was that of *The New York Produce Exchange v. The New York Central and Hudson River Railroad Company et al.*² It appeared from the evidence submitted that the carriers known as the Trunk Lines were in the habit of accepting as their share of the through export rate to European ports ten cents or more per hundred pounds less than the published domestic rates to New York City. The purpose of the discrimination was evidently to favor the export trade of New York. The Commission seems to have preferred not to discuss at this time the question as to whether it was legitimate as a general principle to charge lower rates on traffic intended for export than on that intended for domestic consumption. Its decision in the present case was against the continuance of lower export rates at New York, but the reason cited was that "any method for making rates should be practicable, and not afford a cover for discrimination and injustice." The only practicable method of making export rates, it was said, was to add the established inland rate from the interior to the seaboard to the current ocean rate.

The task of attempting a settlement of the controversy between the seaboard cities as well as between the trunk lines over export rates could not much

¹ Quarterly Journal of Economics, February, 1911, vol. xxv, pp. 294-296.

² 3 I. C. C. Rep. 137.

longer be evaded and in 1898 such a settlement was attempted by the Commission, after a thoro investigation, in the case of *The New York Produce Exchange v. The Baltimore and Ohio Railroad Company et al.*¹

The complainant in the case attacked the differentials on grain, flour, and provisions made by the various lines from the West in favor of Philadelphia, Baltimore, and other cities. As compared to New York rates these differentials favored Philadelphia to the extent of 2 cents per 100 pounds, while Baltimore, Newport News, and Norfolk received a differential of 3 cents per 100 pounds. Boston, on the other hand, paid the same rates on export traffic as were paid to New York. The differentials applied to freight of all classes shipped from Chicago and from territory between Pittsburg and the Mississippi river and between the Ohio river and the Great Lakes. The differentials were somewhat less on traffic coming by the Great Lakes and on that carried on commodity tariffs, but in all cases the rates on export traffic were lower to Philadelphia and Baltimore than to New York.

The history of the differentials showed that they had been applied in one form or another since 1869. They had given rise to many contentions between the cities on the Atlantic seaboard and had caused many destructive rate wars between the carriers leading to the several ports. The struggles "were mostly over export traffic and the differentials were insisted upon and were allowed for the purpose of permitting the various carriers to enjoy a portion of that traffic." The contest between the cities was more bitter than that between the roads; and some

¹ 7 I. C. C. Rep. 812.

of the carriers, weary of the long struggle, requested certain eminent men with legal training and judicial experience to act as an advisory commission to aid in finding a solution to the problem. These gentlemen made an elaborate investigation covering several months and reported in July, 1882.

The conclusion at which they arrived was that distance could not be used as a measure of these differentials; neither could cost of service. Competition which embraced these two, and all other factors, if properly conducted through a series of years was the most reliable guide. Competition, after many years, had resulted in fixing the differentials in force. Those differentials were justified to a certain extent by distance and to a certain extent by cost of service. The purpose of the differential was to equalize the cost of exporting grain and other merchandise through the various ports to which they were applied. A difference in ocean freight rates from those respective ports, corresponding generally to the inland differentials, was found to exist. Upon the whole, therefore, the [advisory] commission declined to recommend that the differentials which had been agreed upon should be disturbed.¹

When the case came before the Interstate Commerce Commission the complainant urged: (1) that the differential was not fair in principle, and (2) that even if the conclusion reached by the advisory commission in 1882 were sound, conditions had so changed since that time that the decision of that year could no longer be held applicable. Philadelphia and Baltimore claimed that the differentials in their favor gave only proper recognition to the fact that the distance from Chicago to those ports was less than to New York. New York interests, however, declared that the wheat of Wisconsin, Minnesota, and the Dakotas was in a territory naturally tributary to New York and that the differentials thus robbed that city of its natural geographical advantages.

¹ 7 I. C. C. Rep. 619-620.

To offset this claim, however, Baltimore declared that the corn territory was naturally tributary to that city. The Commission found it impossible to determine the origin of the traffic, as it varied from year to year.

The New York interests further claimed that differences in cost of service did not justify the discrimination against New York, and that if the object of the differentials was to equalize the cost of exporting grain through the various ports, "then the cost of grain in Europe should be the same by each port whereas, in point of fact, it had been less through the outports than through New York." The results of this discrimination were shown in the decline of the export trade of New York in flour, grain, and provisions since 1873, especially during the '90s, while during those years exports had remained about the same at Philadelphia and had greatly increased at other ports. The Commission discovered on investigation that New York had certain advantages over the other ports for conducting the export business, such as were due to her large and accessible harbor, the accumulation of wealth and business which brought many ships there, her elevator storage capacity, and the Erie Canal. On the other hand, the port of New York labored under certain disadvantages due to the heavy port charges, especially for lighterage, and perhaps to more rigid grain inspection than at other ports. The Commission concluded that "so far as the full cargo business is concerned, there is no appreciable difference in cost, and no appreciable difference in the ocean rates from the three ports, New York, Baltimore, and Philadelphia." In respect to "berth rates" (for quantities less than a full cargo) New York appeared to have an advantage over other

ports owing to the large number of steamships sailing from that port.

On the whole, however, efforts to reach a solution of the problem based on a comparison of differences in distance or on the relative costs of service did not yield satisfactory results to the Interstate Commerce Commission, any more than it had to the Advisory Commission of 1882, or to Mr. Albert Fink, or to the other traffic experts who had at various times grappled with the problem. The Commissioners agreed with the earlier investigators that the differentials were based not on differences in distance or in the cost of service but on competition, and that if they were to be justified at all it must be on the principle of preserving competition between the ports and between the carriers which served these ports.

The primary purpose of these differentials is not to do justice to a particular port but to enable the various competing lines to obtain a fair proportion of this traffic. In other words, the reason for these differentials is competition between railways. Cost of service and distance are very likely taken into account by the defendants in determining whether under the operations of the differentials a particular line has obtained more than its share of the traffic, but the underlying principle is competition.

Having concluded that competition was the principle upon which the differentials were based, the Commissioners next discussed the question as to whether this principle was itself just. They quoted from decisions of the United States Supreme Court¹ to show that competitive conditions do not necessarily but "may justify the preference of one locality to another, provided the interests of the public are not unduly sacrificed to those of the carrier." This

¹ *Tex. & Pacif. R'y Co. v. Interstate Commerce Commission*, 182 U. S. 197; 5 I. C. R. 405. *Interstate Commerce Commission v. Alabama Midland R'y*, 162 U. S. 144.

however is clearly a legal argument; not an economic one. It is more important to observe the grounds on which the Commission attempted to sustain the existing differentials.

Since competition was the basis, the object of the differentials, it was shown, was to make the cost of transporting such articles as grain from Chicago to Liverpool the same through all ports.

Any difference in the expense of ocean carriage should be equalized by a corresponding difference in the cost of inland carriage. . . . Broadly speaking, the differential is supposed to correspond with and make good a difference in the ocean freight rate.

While, however, the differentials at the time of making the investigation (1896) were the same as when first established in 1878, "the gradual lowering of rates, the shrinking of values, the increase of competition, have all operated to make the differentials in favor of Baltimore and Philadelphia mean more today than they did when agreed upon." The Commission however declared (as had the advisory commission of 1882) that while neither considerations of distance nor cost of service could justify entirely the existing differentials, the most satisfactory means of testing them was "the result of their operation." New York was of course quick to point out that this result had been a great decline in her export trade since the differentials went into effect. But the Commissioners, while admitting that there had been a decline, expressed the opinion that this was in keeping with the natural development of the nation and that New York's early preeminence in the export trade had been due largely to artificial conditions which had since been changed by "other strong influences" operating in favor of other ports.

The Commissioners agreed, however, that owing to the fact that the differences in ocean freight rates from the different ports were at that time less than the amount of the differentials, and that the differentials were having more effect than they had in 1877, these two circumstances "would point strongly to the conclusion that they ought to be modified." The Commissioners did not order any modification, however, and their explanation for not doing so is the least satisfactory portion of their reasoning.

The differentials, it was said, applied to all classes of freight and accordingly affected all commodities. But the exports of higher grade than wheat went almost entirely to New York, where they could find quicker service to all parts of the world. Now, said the Commissioners,

if the quantity of these exports, which the differential does not divert to Baltimore or Philadelphia has been increased in late years, it is manifest that this offsets to that extent any increased diversion of grain to the outports. . . . So it is by no means certain that more grain ought not to go through the outports to offset the increased exports of other kinds from New York.

According to this peculiar reasoning the advantages possessed by Baltimore and Philadelphia do not entitle them to as large differentials as they are actually receiving, but this is "offset" by the fact that New York's natural advantages enable her, *in spite of the differentials*, to secure a larger percentage of the high-grade exports than formerly. This fallacious argument is made still weaker by the Commissioners' plea that

if we have made an error, it is in favor of the weak and against the strong. . . . It is almost impossible for us to feel that a locality which engrosses one-half of all the exports and three-fourths of all the imports upon the seaboard can justly complain of any undue diversion of its commerce.

Since our purpose is to interpret rather than to criticise the Commission's conclusions we will not follow the argument further, but will conclude our presentation of this case with the Commission's own summary, which shows clearly that in rendering their decision the Commissioners were convinced that competition long maintained afforded the best method of judging as to the reasonableness of the rates in question.

The principle upon which these differentials have been established is legitimate. Looking to the basis of the differentials themselves, while there is much to indicate that they should perhaps be somewhat modified, it cannot be affirmed with certainty that they are wrong. Considering their effect as exhibited through a long series of years, it is impossible to say that they have exercised any unward or unnatural influence upon traffic.

The decisions of the Interstate Commerce Commission in the later cases dealing with export rates which have come before it have been much influenced by the decision of the United States Supreme Court in the *Import rate case*¹ in which the Court, over-ruling the Commission, held that

among the circumstances and conditions to be considered, as well in the case of the traffic originating in foreign ports as in the case of traffic originating within the limits of the United States, competition that affects rates should be considered, and in deciding whether rates and charges made at a low rate to secure foreign freights which would otherwise go by other competitive routes are or are not undue and unjust, the fair interests of the carrier companies and the welfare of the community which is to receive and consume the commodities are to be considered.

By inference, at least, this decision of the Supreme Court would apply to the export as well as to the import traffic, especially since competition is dis-

¹ *Tex. & Pacif. R'y Co. v. Interstate Commerce Commission*, 162 U. S. 197; 5 L. C. R. 405.

tinctly set forth as a reason why lower rates might be granted by carriers to commodities intended for export than were granted to the same articles when intended for domestic consumption. With this case as a precedent, therefore, the Commission decided in the case of Boston export traffic¹ that even tho these goods were not shipped on a through rate, they might legitimately be charged lower rates than were accorded to the same goods intended for domestic consumption. "The export rate to Boston," said the Commissioners, "is not in reality a Boston rate at all but is in essence the inland division of a through rate through that port to foreign ports."

The principle underlying this decision is clearly not cost of service but competition. The decision is in accord with the informal opinion rendered in the case of the *Export Trade of Boston*,² but is not in agreement with the rule laid down in *New York Produce Exchange v. New York Central and Hudson River Railroad Company et al.*³ The language of the Commissioners also indicates that they believed it correct in principle to apply a different ruling in the case of Boston export traffic than they would apply at New York. For, while they admitted that their decision in the present case was influenced more or less by the Supreme Court's decision in the import rate case, they practically assumed full responsibility for their own decision by stating that the decision of the Supreme Court did not carry with it any obligation on the part of the Commission to sanction lower rates on import or export traffic than on domestic traffic, but merely required that "in determining whether such rate constitutes an unjust

¹ *Kemble v. B. & A. R. R. Co. et al.*, 8 I. C. C. Rep. 110.

² 1 I. C. C. Rep. 24.

³ 3 I. C. C. Rep. 137.

discrimination or an undue preference, the interest of the carrier and the consumer should be taken into account as well as that of the producer." The Commission therefore declared that "if any individual or locality feels itself aggrieved by the rates made upon export or import business as compared with domestic business, the Commission has full authority to consider and pass upon that grievance." So far as Boston export traffic is concerned, therefore, there appears to be no difference in the opinions of the Court and the Commission. Both tribunals agree that competition is the controlling principle in the case.

The real difference in the opinions of these two bodies is best revealed in the Commission's report on an investigation made by it in 1899, *In the matter of relative rates on export and domestic traffic in grain*.¹ Two questions were involved: (1) To what extent, if at all, might the carriers make a different rate on grain intended for export than that given to the same commodity when intended for domestic use? (2) Might there be a legitimate difference made between the export rate on grain and that on its chief products, flour and meal?

With reference to the first point, the evidence showed that the railroads connecting the Middle West with the Atlantic seaboard were giving a rate of 12 cents per 100 pounds on grain shipped from the Mississippi river to New York when it was intended for export, and at the same time were charging 19½ cents per 100 pounds on the grain when it was intended for domestic consumption. The carriers claimed that "it is a matter of no consequence to the eastern consumer what rate is charged to the foreigner, provided

¹ 8 I. C. C. Rep. 214.

the domestic rate is a reasonable one." This argument did not appeal to the Commissioners. They replied:—

To this proposition we cannot fully assent. In the first place the foreigner is to an extent in competition with the American. Both are engaged in the production of articles sold in the same market either abroad or in the United States. If the Englishman can procure the necessities of life cheaper than his American competitor, that gives him the advantage. . . . Unless there is some good reason for the distinction, the rate to the American ought not to be higher than to the foreigner. If our carriers, in the absence of any constraining reason, can transport corn from the Mississippi river to New York for 12 cents per hundred pounds for export, that of itself shows that a rate of 19½ cents to the domestic consumer is unreasonable.

The carriers made some effort to show that the cost of service was less for the export than for the domestic traffic owing to bulk of shipments, methods of unloading, etc., but the Commission dismissed this argument with the statement that the evidence on this point was insufficient. The main ground of defence occupied by the carriers was that competitive conditions existed in the case of the export traffic in grain which did not exist in the case of grain intended for domestic consumption. The competitive conditions were of two sorts: (1) competition in the European market between American producers and those of other grain exporting countries; (2) competition between the carriers engaged in transporting export grains.

With reference to the first form of competition the defence claimed that the price of wheat was fixed both at home and abroad by the foreign market and it was said that if the price of wheat abroad were lower than the price in this country plus the established rate for transportation, then either the price of wheat must be reduced or the rate of transportation must

be lowered. By pursuing the latter course, the carriers claimed that the American producer received the entire benefit from the reduction of railway rates. This patriotic and philanthropic mode of procedure on the part of the railroads did not greatly appeal to the Commissioners. They did not accept the statement that the foreign market fixed the price of American grain and said, "As an actual fact it is doubtless true that the price of grain, certainly wheat, abroad is fixed neither by the foreign nor by the American supply alone, but by the one acting upon the other." The facts, furthermore, did not show that at the time of the investigation the low rates on export grain had been rendered necessary by the condition of the foreign market, but they did show, according to the Commissioners, that "the American producer has derived no substantial benefit from these rates; that the American carrier has lost enormously by them, and that the foreigner alone has had the benefit of them."

The Commission was willing to attach more importance to the second form of competition cited by the defence, viz. that between the carriers themselves. This competition was three-fold in character: (1) that between the trunk lines and those running to the Gulf ports; (2) that between the trunk lines themselves; and (3) that between the railroads and the water routes, especially the Great Lakes, St. Lawrence river, and the Erie Canal. This competition, the Commissioners were compelled to admit, must be considered in judging as to the reasonableness of the export rates, tho they declared it had "sacrificed millions of dollars" of revenue of American railroads. "Nor would we," said they, "permit the continuance of such a system if we had the power to prevent it."

Owing, however, to the influence of water competition, as well as to the fact that "the purpose of the act was to foster competition," and "the highest judicial authority has declared that competition between railways may be a reason for making a lower charge to the more distant point," the Commission confessed itself powerless to order carriers to make their rates on domestic traffic as low as that given on the export traffic.

The question as to whether or no it was legitimate to charge a higher rate on grain products than on grain, when both were intended for export, was answered by the Commission on much the same principle as was applied to the settlement of the controversy over the domestic and export grain rates. The carriers sought to justify the higher rates on flour than on grain on several grounds: (1) Cost of service. Flour was said to be more liable than wheat to injury; wheat moved in train load lots; wheat was delivered in New York *at* the ship's side, flour *over* the ship's side. The Commission admitted some difference in the cost of service but thought it would not exceed one or two cents per hundred pounds. (2) The carriers urged that the general rule that manufactured products should pay a higher rate than raw materials was applicable to this case and that the value of the flour was greater than that of the wheat. The Commission said that "when it is remembered that the cheaper grades of flour are usually exported, it is questionable whether the difference is material." (3) Water competition, a prominent factor in connection with the movement of wheat, was shown to be of less importance in case of the flour traffic. Hence, in spite of strong evidence submitted by the millers, showing that the profits from manufacturing flour

for export were only from one to two cents per hundred pounds, the Commissioners said: "We think and find that the lake competition fairly fixes the rate on flour at from two to four cents per hundred pounds above the wheat rate." In spite of the fact that water competition as well as competition between the railroads was a real factor in the case, and that both the law and the courts compelled its recognition, the Commission evinced throughout the entire case a strong feeling that this competition was bad policy not only for the public at large but even for the carriers. This feeling, as well as the desire to go as far as they could go in sustaining American millers in their competition with the milling industry abroad, led the Commissioners to decide that "the rate upon flour for export ought not to exceed that upon wheat by more than 2 cents per hundred pounds."

Three years after the Commission had rendered its decision in the above case, the trunk lines leading to the East from Chicago and the Mississippi river gave notice of an advance to be made in the rate on grain from a former published rate of $17\frac{1}{2}$ cents per 100 pounds (which, however, was seldom maintained) to a rate of 20 cents per 100 pounds. When the Commission undertook an investigation¹ of the causes and justification of the increase, the carriers gave as reasons: (1) changes in commercial conditions, and (2) cessation of competition to a degree which made it easier to maintain published rates. The Commission did not discover that there had been any such change in the commercial conditions for producing, shipping, and marketing grain as would warrant an advance in the rates, but the second

¹ In the matter of proposed advances in freight rates, 9 I. C. C. Rep. 384.

reason advanced by the carriers seemed a more plausible explanation for the increase.

The intense competition which had for years existed between the lines leading from the West to the Atlantic seaboard had been, if not ended, at least in a measure brought under control by purchase of large blocks of stock in the most troublesome of these competing lines by the two strongest lines, the Pennsylvania and the New York Central railroads. This purchase and resulting control of the weaker lines by the stronger ones made it seem much more likely that in the future the published rates could be maintained.

The Commission refused to justify the advance in the published rates from $17\frac{1}{2}$ to 20 cents per 100 pounds. They called attention to the fact that the language of the act to regulate commerce and the decisions of the Supreme Court in interpreting that act and the Sherman Anti-Trust Act showed that public opinion reflected in legislation and judicial decisions was unwilling to concede that competition in the railway business was not a proper means of regulating freight and passenger business. The Commission's discussion of the matter shows clearly its own belief that competition between railways was frequently of such a character as not to guarantee reasonable rates.

It has been frequently observed that competition in rates under the act to regulate commerce is a misnomer. This grain rate between Chicago and New York must be the same by all lines. If any one line reduces that rate, every other line must make a corresponding reduction or withdraw from the business. No line can, therefore, hope to gain a permanent advantage by a reduction in the published tariff. So long as rates are observed there can be no competition in the rate, altho there may be in facilities. Such competition necessarily consists in departures from the published rate. Such competition does not, however, materially increase the total amount of traffic. It may turn additional tonnage to a

particular line temporarily, but the total result is a reduction in the aggregate gross and net revenues of all lines and probably in the net revenue of every individual line.

To the Commission, therefore, the mere fact that competition in rate making is shown to exist is not a sufficient proof that the resulting rates are reasonable. Competition may make the rates too low. The railroads insisted that this was true in the present instance and claimed that even the former published rate of $17\frac{1}{2}$ cents per 100 pounds was so low that it was unremunerative. To decide this point the Commissioners made an investigation into relative costs of moving grain and other commodities, with the following results: —

Of all commodities grain is among the very most desirable species of traffic. It moves between Chicago and the Atlantic seaboard in large quantities, frequently in train loads. Cars can be loaded to their full capacity. The nature of the business permits prompt loading and unloading. The character of the service required allows the most economical handling of trains with respect to rate of speed and other operating conditions. There is hardly any kind of traffic moving from Chicago to the Atlantic seaboard which can be transported at less cost to the carriers than grain. . . . The first reason urged by the carriers for advancing these rates beyond the competitive point is not therefore sustained. Whether tested by the actual cost of movement, by what carriers have voluntarily accepted in the past, or by comparison with other somewhat similar kinds of traffic, this rate is not, in our opinion, extravagantly low.

While the Commission, therefore, still held to the theory that competition was the controlling factor in the case, the competition which they recognized as legitimate was that limited in its operation by cost of service.

The ever-perplexing problem of the differential rates between the North Atlantic ports came up

once more in the year 1904, when the Commission, at the request of the commercial organizations of Boston, New York, Philadelphia, and Baltimore, instituted an inquiry¹ into the reasonableness of the railway rates to and from these cities with the purpose of determining whether the existing differentials should be abolished, or, if retained, be modified. The Commission admitted that it had no authority to compel the carriers to accept its conclusions, but for our purpose this fact is of no importance, since we are interested only in the Commissioners' views as to the principles involved.

On the whole, the conclusions reached did not differ materially from those arrived at in the earlier investigations. The Commission seems to have felt that the earlier decisions were not based on any fundamental principle of rate making and in the present instance they declared: "We have endeavored to find some fundamental principle by the application of which this dispute might be laid to rest, but entirely without success." The evidence showed that since the last hearing on the subject the differentials which had formerly existed in favor of Baltimore and Philadelphia had been greatly reduced, especially on grain and on iron and steel, where they amounted to only one-half the old differentials. The reason for the change was that there was no longer any considerable difference in the ocean rates from the various ports. Baltimore claimed indeed that "on the basis of distance the present rates did not give that locality anything like the advantage to which it was entitled." To this argument the Commission pertinently replied:—

¹ In the matter of Differential Freight Rates to and from North Atlantic Ports, 11 I. C. C. Rep. 13.

It must be evident that distance is properly regarded as a factor in rate making mainly because it is supposed to express differences in the cost of service. . . . The grades by the New York Central lines between Chicago and New York are easier than those by the Pennsylvania and it is quite conceivable that the actual cost of transportation over the longer haul might be less than over the shorter, and in that event New York, while more distant in geographical miles, might be nearer in transportation facilities.

The Commissioners did not concede, however, that cost of service could be made use of as a principle for finding a solution to the problem. They said: —

Nothing of all that need be considered by us. There is no testimony in this record which attempts to show the relative cost of handling this traffic from Chicago to the different ports, and indeed, as was said by the Advisory Commission in 1882, the elements which enter into the determination of that question are so complex and so various as to render it impossible of satisfactory solution.

Having declared that in this case "there is no fundamental principle which can be applied," the Commission nevertheless insisted that "there are certain fundamental considerations which should be kept in mind." In the opinion of the Commission, these fundamental considerations were: (1) the maintenance of competition between the ports; (2) the maintenance of competition between the carriers.

(1) If it can be properly done, these ports should all be kept open for the transaction of this export business upon such terms that each one may fairly compete for it. No marked advantage should be given, certainly not by the creation of artificial conditions, to any one port over the other. *The ideal conditions would be the establishment of such rates that enterprise at either port in the way of improvement in service or facilities might be rewarded by increased business and that there might exist that healthy struggle of locality against locality which is the best security for proper commercial development.*

(2) If again it can properly be done, then rates should be so adjusted that this competitive traffic will be fairly distributed between the different lines of railway which serve these ports.

Each one of these four cities is reached by two or more great railway systems. The prosperity of these cities and systems cannot be separated. The ability of a railroad to adequately discharge its duty for a reasonable charge depends upon the business which it can obtain, and no one of these systems should be deprived of its fair portion of this enormous export traffic. The purpose of these differentials from the first has been to distribute this business between the different carriers and we said in our former report that this was not improper unless the means used were improper.

This double competition between cities and between railroads was the fundamental consideration which in former times had led to the granting of a differential rate of three cents in favor of Baltimore and of two cents in favor of Philadelphia. Under changed conditions this same competition had in 1899 caused a reduction of these differentials by one half. For the same reasons which had led it to uphold the former differentials the Commission in the present case declared: "We are satisfied that the differentials of one cent and one and one-half cents, which were then [1899] established and which are still in effect, are sufficiently large." Some slight modifications were recommended in the existing differentials on flour and on grain coming by way of the Great Lakes.

It would appear from this long discussion of the export rate cases that while competition was selected by the Commission as the ruling factor in the determination of rates, its selection was a matter of expediency rather than of principle. The Commissioners seem to have felt that this competition did not itself represent any "fundamental principle." Much in their reasoning indicates that they would gladly have reached a decision on the basis of cost of service if the facts showing such cost had been at hand. Yet it is by no means certain that they

would have preferred to rest their decision on cost of service. The idea that competition creates "the ideal condition" for the distribution of traffic among the ports is carried so far in the last case considered that the majority of the Commissioners said: "It is possible that in the future it may become evident that Boston cannot fairly compete for this traffic upon the present basis," and hint that should this prove to be the case it might become necessary to give Boston a lower rate than that given to New York; this too in spite of the fact that the cost of moving traffic to Boston is admitted to be greater than to New York.

The same emphasis on competition is shown in answer to New York's claim that the maintenance of any differential forces traffic out of its natural channels and imposes a burden on the public. The Commission replied: "To decree that traffic should always move by the cheapest route would be to entirely eliminate competition, which within reasonable bounds is for the interest of the general public."

It would be hard to say how far this un-economic sentiment, which makes of competition an end instead of a means to an end, expresses the real judgment of the Commission; how far it is merely a reflection of the spirit of the act to regulate commerce and of the decisions of the courts.

5. Competition between producers

Besides seeking to maintain competition between the carriers themselves and between places, the Commission has shown no little concern over the maintenance of competition between producers. Generally speaking, its efforts in this direction have been made

in behalf of the small producer or dealer who was in danger of being driven out of business by a more powerful competitor. The Commission has apparently felt that it was charged with the duty of checking the growth of monopoly in the field of production as well as in that of transportation.

In the case of *The F. Schumacher Milling Company et al. v. The Chicago, Rock Island, and Pacific Railway Company et al.*,¹ the complainant asked that the carriers be required to give the same rates on a mixed car load of cereal products as they gave to a car load of only one of these products. The defendants had been in the habit of charging the ordinary less than car load rates on such shipments. Generally speaking, the Commission has been inclined to favor the granting of car load rates on mixed car loads of similar products.² In the present instance it declined to order a car load rate on the mixed car load shipments. The advantage of such a rate would fall to a single producer, the complainant, since no other producers of these commodities could ship in car load quantities.

To grant a mixed car load rate would enable the complainant to crush out all competition on the part of those who make only one or two of the products in controversy. It is undoubtedly true that neither the Commission nor carriers are charged with any particular oversight over localities or authorized to stimulate them with artificial helps to prosperity. But when a method of regulation would have the effect of throwing many competitors out of the trade, and centralizing it in the hands of one or more dealers, it would not be permissible if another method, without doing wrong to any one, would have the effect of leaving the market open to all competitors. The rule is simply a limitation put upon the extension of the car load rate, and should be proven by the complainant to be unfair, unjust and discriminative, if its abrogation is sought.

¹ 6 I. C. C. Rep. 61; 4 I. C. R. 373.

² See for example 5 I. C. C. Rep. 633 and 9 I. C. C. Rep. 602.

For the same reasons the Commissioners ordered ¹ a reduction in the rates on soap shipped in car load lots. The carriers had recently changed the classification so that soap, having been placed in fourth class when shipped in car load lots, was thereafter to pay "20 per cent less than third-class rates." At the same time shippers who shipped soap as part of a mixed car load from one consignor to one consignee were to be charged only the "highest minimum car load rate provided for any of the articles" so shipped. It was shown that the only soap manufacturers who could avail themselves of this privilege were the big meat packers who by making up a mixed car load of provisions and soap could receive fifth-class rates on the entire car load, while their competitors who manufactured only soap would be obliged to pay the 20 per cent less than third-class rates. The Commissioners held that such discrimination was opposed to the principles of competition between producers and assisted materially in the fostering of monopoly.

Still another illustration of the same principle is found in the case of *Brownell et al. v. Columbus and Cincinnati Midland Railroad Company et al.*² The complainant demanded that the rates on a car load of eggs be made less than the rates given on less than car load lots. This demand the railroad had refused. The complainants claimed that the cost of gathering eggs by the carrier was much less when they were shipped by the large dealer than when shipped by the small dealer and that if the carrier made no difference in the rates it was guilty of a discrimination against the large dealer. The defendants, on the

¹ *The Proctor and Gamble Company v. C. H. & D. R'y Co. et al.* 9 I. C. C. Rep. 440.

² 5 I. C. C. Rep. 638; 4 I. C. R. 285.

other hand, claimed that they had for years been developing a system of reaching the small dealer in eggs and that this was to the interest of the public at large as well as to the interest of the carriers, since the effect of granting lower rates on car load lots would be to concentrate the egg business into the hands of the large dealers who could then, by threatening to throw all their business to one road, compel unfair concessions from the carriers.

It was this argument of the defendants which prevailed in the minds of the majority of the Commissioners and led them to refuse the request for a car load rate. They gave some consideration to the cost of service arguments of the complainants but declared that only a few points of difference in the cost of car load and less than car load shipments had been shown to exist. On the other hand, they said:—

The evidence shows that at the present time 83 per cent of the business is controlled by these large shippers, and it would seem that an order granted as prayed for by complainant would go far towards concentrating the whole business in their hands. The tendency of the times, deplored by all, is the concentration of the transportation business of the country in the hands of a few individuals who control large amounts of business. This interferes with competition, and works an injury to many who are almost as well equipped for the business as those who in the end succeed by a concentration of power in the hands of a few to rule out all below them.

Commissioner Knapp, who united with the majority of the Commission in the final decision, declared that carriers were not bound as a matter of right to offer special car load rates. "It is one thing to concede the right to make a car load rate, it is quite another to require it." Commissioner Morrison, on the other hand, dissented from the conclusions of his fellow

commissioners and held that when, as in the present instance, a lower cost of service for car load shipments could be shown to exist, car load rates were required as a matter of principle.

In another instance¹ where the right of a carrier to give a lower rate on a cargo or train load of wheat than on single car load shipments was brought in question, the defendants were able to show that the costs of handling and shipping the wheat in train loads was less and the time saved was greater than in the case of single car load shipments. The Commission held that such a practice "must tend very strongly to throw business into the hands of the larger dealer exclusively," and was therefore not permissible.

In the case of *Glade Coal Company v. Baltimore & Ohio Railroad Company*,² it was shown that the defendant carrier was charging 50 cents per ton more on coal loaded from wagons or sleds than when it was loaded from a tipple. The reason given for the discrimination was that loading from tipple could be done at less expense to the carrier and usually in less time than when the cars were loaded from a wagon.

The Commission acknowledged that the costs of loading cars were less when the loading was from a tipple than when it was from wagons, but it did not consider the difference in costs sufficient to warrant the discrimination in rates. Such discrimination was found to result in a reduction in the number of shippers and the Commission said:—

We do not consider it at all clear that the interests of the public, in the true sense of the term, would be subserved by a reduction in the number of shippers and shipping points. On the contrary we think such interests demand that all persons wishing to ship

¹ *Paine Bros. & Co. v. L. V. R. R. Co. et al.*, 7 I. C. C. Rep. 218.

² 10 I. C. C. Rep. 226.

goods to market shall be given a reasonable opportunity to do so. Competition is considered a public benefit and the greater the number of shippers the greater the competition among them will be. . . . If carriers are allowed to make differences in the cost of transportation, and see fit to do so regardless of the effect upon shippers and localities, the ultimate result must be that the bulk of the traffic will be handled by comparatively few shippers and from and to large centers. We cannot believe such a result was either intended or desired by the framers of the regulating statute.

In all the cases in this group it will be observed that the Commission has given competition a distinct preference over costs of service as a means of determining the reasonableness of the rates in question.

6. *Competition to prevent a transportation monopoly*

We have already observed that in numerous instances the Commission has considered that competition between carriers was a sufficient excuse for certain discriminations in rates. It has also appeared that the decisions of the courts have compelled the Commission to enlarge the number of these cases. In view of the importance thus given to competition as a regulator of rates, it goes without saying that the Commission would view with displeasure all efforts on the part of the carriers to take advantage of the disappearance of rivalry to raise their rates above the point at which a normal competition would have tended to fix them. The progress of railway consolidation within the last fifteen years has brought about numerous instances of such rate increases. Some of these increases have been brought to the attention of the Commission by shippers seeking relief.

In the case of the *Central Yellow Pine Association v. The Illinois Central Railroad Company et al.*,¹ an

¹ 10 I. C. C. Rep. 505.

association of persons engaged in the manufacture of lumber in the southern states east of the Mississippi river complained of a steady advance, covering a period of several years, in the rates on lumber to points on the Ohio river and beyond. The carriers gave two reasons for the advance: (1) The increasing value of the service; the business of manufacturing lumber was yielding increasing profits and the carriers by their rate advances were seeking to share in the general prosperity. (2) Cost of service; higher wages and increased cost of materials made it necessary to increase the rates on lumber, which had not been yielding its fair proportion of the revenues needed.

Postponing for the present the Commissioners' discussion of the carrier's claim to share in the increased prosperity of the shippers, we may say that they did not find that either cost of service or value of service warranted the increase in rates. These advances in rates, it was shown, had been brought about as a result of an agreement reached between the roads east of the Mississippi river and the roads west of that river engaged in the lumber traffic. The majority of the Commission decided (Messrs. Knapp and Fifer dissenting) that this agreement, whether unlawful or not, had resulted in the elimination of competition and "competition is favored by the laws."

The ground upon which competition is favored is that it conduces to the reasonableness of rates or to the protection of the public from unreasonably high or excessive rates. In *United States v. Freight Association* (168 U. S. 339) the Supreme Court says "competition will itself bring charges down to what may be reasonable." The act to regulate commerce (section 1), in prohibiting unreasonableness of rates, in effect forbids whatever conduces to such unreasonableness. In any event it is incumbent upon this Commission, when the reasonableness of rates is in issue before it, to consider how those rates were brought about — whether they are the product of untrammelled competition or the result of a

concert of action or combination between the carriers establishing and maintaining them. The advanced rates complained of cannot be claimed to be the outcome of competition, because "the natural, direct and immediate effect of competition is to lower" (177 U. S. 577) rather than to advance rates.

The case of *H. H. Tift et al. v. Southern Railway Company et al.*¹ presented much the same situation as the above case and the Commissioners reached the same conclusion as to the necessity of maintaining competition.

In another case,² altho the Commission did not claim any jurisdiction, it expressed the opinion that railroads subject to the act to regulate commerce had no right to refuse to enter into an agreement with a boat line engaged in the coasting trade when at the same time it had made such an agreement with another line engaged in this business. The Enterprise Transportation Company was a steamship company which in June, 1905, began to engage in traffic by boat between Fall River, Massachusetts, and New York City. Prior to its establishment the various boat lines operating on Long Island Sound were consolidated under the name of the New England Navigation Company, which was controlled by the New York, New Haven, and Hartford Railroad Company. In this way the New Haven road had secured a virtual monopoly on transportation between southern New England and New York. The establishment of the Enterprise Company had resulted in lowering considerably the rates of transportation between Fall River and New York; but the railroads running west from New York had refused to enter into any

¹ 10 I. C. C. Rep. 548.

² In the matter of alleged unlawful discriminations against the Enterprise Transportation Company by railroad lines leading from New York City, 11 I. C. C. Rep. 587.

joint rates with this company, altho they had such arrangements with the New England Navigation Company. This compelled the Enterprise Company to depend entirely on local traffic, as the low through rates furnished by the joint-rate agreement between the New England Navigation Company and the railroads made it impossible for others lacking such arrangements to compete with them.

The railroads upheld their refusal to enter into joint-rate agreements with the Enterprise Company on what they called "business principles." Such a joint rate they held would not increase the amount of traffic from Fall River but would merely put them to the trouble of receiving goods from two lines instead of one. The Commissioners admitted that there was force in the arguments of the carriers, but maintained nevertheless that this throttling of competition was detrimental to the public interests. They said:—

It is undoubtedly true that better and more efficient service is obtained when competition exists than when the business is entirely transacted by one concern. . . . When the competition of the Enterprise Company had disappeared, rates would be restored to what they formerly were, which, it fairly appears, were higher than reasonable competition would produce. The existence of the Enterprise Company as a competitive factor is of distinct value to the public, and that existence may depend upon its right to engage in through business.

It would be useless, after this long review of the cases in which the Interstate Commerce Commission has seized on competition as the determining factor, to attempt to show that the Commission has been always consistent in its argument as to the part which competition should play in matters of rate making. At times it has seemed to argue that competition itself represents "no fundamental principle" but is only a "consideration which should be kept in mind";

at other times it has given a distinct preference to competition over cost of service as a principle. At times the Commission has believed that competition has made rates too low; at other times too high. Some of the apparent inconsistencies can doubtless be attributed to the changes in membership of the Commission. Other and more serious inconsistencies are due to a desire to preserve the spirit of the act and to respect the decisions of the courts, even when the Commissioners themselves have personally had different views concerning competition. In spite of these inconsistencies, apparent and real, a careful consideration of the cases which we have reviewed and of others not covered will show that it is not merely competition itself which the Commission has sought to preserve and upon which it has at times relied as a guide to the solution of the problems presented; it is rather that type of competition which represents the normal state of business affairs, the competition which leaves to railway owners a reasonable return for the services rendered and which in turn requires them to render these services at what the economist means when he speaks of cost prices.

VII. CLASS AND SECTIONAL INTERESTS

In the discussion of railway rate theories to be found in the First Annual Report of the Interstate Commerce Commission,¹ to which reference has several times been made in this series of papers, we find mentioned among the "considerations which may justly affect rates" the following:—

Every section of the country has its peculiar products which it desires to market as widely as possible, and is not unwilling that

¹ P. 21.

classification should be made use of by the railroads which serve it as a means of favoring and thus extending the traffic in local productions; favoring them by giving them low classification, and thus low rates, and discriminating against those of other sections through a classification which rated them more highly.

The principle that common carriers engaged in interstate commerce and subject to the regulation of a federal statute may legitimately make rates which openly favor one section of the country and discriminate against other sections is a notion so contrary to the spirit of the act to regulate commerce as well as to the Constitution, that we might well hesitate to believe that the Interstate Commerce Commission had intended to give its approval to the above statement were it not for the fact that in its Second Annual Report, as well as in certain decisions, it restates this doctrine in such a fashion as to leave us no longer in doubt as to its approval of this form of discrimination under certain circumstances. The statement in the Second Annual Report ¹ reads as follows: —

Every railroad serves a certain territory and every part of the country has to some extent interests to be served which are special and peculiar to it, and these it will naturally desire to have specially considered by local, official and corporate authorities, whether the business in hand be the imposition of taxes or the adjustment of rates for transportation; and as many other circumstances besides cost of transportation and value of service must always be taken into account, such as bulk or weight of articles, convenience of handling, special liability to injury and necessity for speedy delivery, and the field of production or of consumption, so that there can never be any fixed or definite rule for the measurement of the charge to be made upon any particular traffic, it is always possible for the railroad manager in making rates to yield something to the special interests of his section, and still keep in view the general principles upon which he will professedly act.

It is not our purpose in these articles to criticise the work of the Interstate Commerce Commission

¹ P. 35.

or, except incidentally, the theories which it has promulgated. It will be sufficient, therefore, to say that it is fortunate that there are not many cases heard by the Commission which have been decided strictly on the basis of sectional or class interests, altho there are several cases in which the strong claims put forth in behalf of certain communities or certain classes of persons have received a degree of recognition.

1. *Domestic Versus Foreign Producers*

Perhaps the best example of this form of discrimination, at least the one which will excite the least criticism, is where the Commission has undertaken to assist the domestic producer at the expense of the foreigner. A good illustration is afforded by the case of *The National Hay Association v. The Lake Shore and Michigan Southern Railway Company et al.*¹ Prior to the passage of the Dingley Tariff Act in 1897 hay from Canada had competed actively with hay from the Middle West in the eastern markets of the United States. At this time the rates on Canadian hay under the Official Classification adopted by the eastern trunk lines were commodity rates lower than fifth-class rates while hay from the Middle West paid sixth-class rates. In order to protect the domestic producer of hay the Dingley Tariff Act increased the tariff on hay coming from foreign countries from two dollars to four dollars a ton. This increase in the tariff rate checked the importation of hay from Canada, tho it did not actually prevent it.

On January 1, 1900, the roads operating under the Official Classification changed the classification of American hay from sixth class to fifth class with a

¹ 9 I. C. C. Rep. 264.

corresponding increase of rates, but left the commodity rates on Canadian hay as they had been. Under this readjustment of rates the importation of Canadian hay rapidly increased and the competition was proving a hindrance to the American producer. The roads gave as reasons for the change in rates cost of service and need of more revenue, neither of which arguments the Commission was inclined to recognize. On the other hand, the Commissioners called attention to the fact that the advance in rates had in reality thwarted the purpose of Congress in increasing the tariff on Canadian hay. They said: —

That advance interfered with a long standing relation of charges from the two producing sections which operated to give an advantage to Canadian hay compared with the pre-existing situation, and such change in a long existing rate adjustment was in favor of a producing section in an adjacent foreign country from which hay shipments into the United States are required by law to pay a duty as great as \$4 per ton.

The effect of the Commission's decision was, of course, to favor the producer of hay in the Middle West against not only the Canadian producer but also the eastern consumer. Whatever our ideas may be as to the necessity or desirability of a tariff on hay, we shall all probably agree that the Commission was bound to reach a decision which did not interfere with the interests of the nation at large as those interests had been interpreted by the Dingley Tariff Act.

2. *Vested Interests*

Less justifiable to the present writer appear to be those cases in which the Commission has by its decisions upheld existing methods of production or distribution in which certain sections or certain classes of pro-

ducers have appeared to have a particular interest at the expense of new and cheaper methods which were coming into use. Probably the best illustration of this class of cases comes from the cotton traffic.¹

By the method commonly employed throughout the South, cotton after being ginned at the plantation gin is made into a square bale having a density of about $12\frac{1}{2}$ pounds to the cubic foot. The rates are the same per 100 pounds for this uncompressed cotton as they are for cotton which has been further compressed. But before cotton is carried long distances it is usually taken by the carrier to a compress situated on the route, and frequently owned by the railroad, and the plantation bales are further compressed until the average bale has a density of about 23 pounds per cubic foot. When compressed in this way about 25,000 pounds of cotton can be conveniently carried in a single car.

For some years prior to the bringing of the complaint there had been coming into use a new method of compressing cotton into round bales by means of a patent device belonging to the complainant. The device was relatively inexpensive, costing from \$3500 to \$4000 each, and could be used in connection with the plantation or neighborhood gin. Cotton when compressed by this method has a density of about 45 to 47 pounds per cubic foot and about 45,000 pounds can be shipped in a single car load. When compressed by this method immediately after ginning it is in condition to be shipped to its final destination. It has been shown that cotton compressed by this method is in better condition when it reaches the

¹ *Planters' Compress Company v. C. C. C. & St. L. R'y. Co. et al.*, 11 I. C. C. Rep. 382.

manufacturer and is more in demand than when baled by the usual methods.¹

Owing to the fact that a much larger quantity of cotton in round bales could be shipped in a single car load than when it was sent in the old-fashioned square bales, the carriers made defendants in the case had for two years prior to 1900 given a net rate of 20 cents per 100 pounds to the cotton compressed by the complainant's process, while at the same time cotton in square bales had been charged a rate of 30 cents per 100 pounds. The complainant asked that this adjustment of rates be continued. It was shown that steamship companies exporting cotton granted lower rates on round-bale cotton than on cotton baled in the ordinary way. "This," acknowledged the Commission, "is because its greater density permits a greater weight to be loaded in the same space, and perhaps to some extent because it is easier to handle."

In spite of the obvious advantages of transporting cotton in the more compact bales, the majority of the Commission were opposed to granting lower rates to car load shipments of 45,000 pounds or more than were granted to car load shipments with 25,000 pounds as the average car load. The reasons for the decision were long-standing custom and the fear of monopoly. It was said that to adjust rates in the way asked for by the complainant would encourage the use of complainant's device throughout the South in order to get the benefits of the lower rates. This in turn would result in having cotton compressed at the gin houses

¹ See for a discussion of the relative merits of the square and the round bale, H. Hammond, *The Handling and Uses of Cotton*, in Bulletin No. 33, Office of Experiment Stations, U. S. Dept. of Agric. pp. 360-365; also the present writer's, *Cotton Culture and Cotton Trade*, Pub. American Econ. Assoc., New Series, No. 1, pp. 351-355.

and this, thought the majority of the Commissioners, would make difficult the classification of cotton and its separation into different grades. They did not question the contention of the complainant that the costs to the carrier of shipping cotton compressed by the complainant's method were less than when the older method of baling was used, but they claimed that this did not impose upon the carrier "the obligation to recognize this saving of expense by a corresponding reduction of charges." The majority held that the thing of chief importance was to secure reasonable rates on commodities in the form in which they were commonly prepared for transportation, and held that when rates so established were reasonable, the same rates did not become unreasonable to the shipper who preferred to prepare his shipment in a form which might afford the carrier a greater profit per hundred pounds. "To adjust rates on different articles on the basis of comparative cost to the carrier," said the majority report, "would involve a wide departure from accepted theories of rate making: to adjust rates on the same article with reference to cost of carriage under different conditions would be still more radical."

Commissioner Prouty wrote a vigorous dissenting opinion in the case in which he argued for the logical application of the cost of service principle. He openly accused his colleagues of trying to shield themselves behind trivial and irrelevant analogies and of reaching a decision which tended to hinder the course of industry and progress. He declared that car capacity more than any other one thing was generally made use of by the carriers in determining rates and said that the Commission had "repeatedly recognized the substantial accuracy of this position." He de-

clared that he agreed with the complainant that if 30 cents per 100 pounds was a reasonable rate for transporting 25,000 pounds of cotton in a car, then it was entirely unreasonable to apply that rate to a car of 50,000 pounds. The carrier would be compelled to haul two car loads of the square-bale cotton to earn the same amount of money which it received for a car load of round bales.

Taking up the arguments made by the majority, Mr. Prouty discussed the objection made to cost of service as follows:—

It is said that cost of service is not the test of a reasonable rate. This is undoubtedly true in many cases. There are many instances in which there is no intimate connection between cost of carriage and the rate charged for that carriage. But with respect to a staple commodity like cotton I believe that there should be a very intimate connection between cost of carriage and the rate charged the public, and that if in any way the cost of carriage has been or can be actually reduced one-third, the public should be given the benefit of that reduction.

Mr. Prouty next pointed out what was likely to be the effect of the majority decision on the business of the complainant and on progress in the direction of reducing the costs of marketing the cotton crop.

The only advantage of the round bale is that it produces a bale of greater density and thereby reduces the actual cost of movement materially. If this advantage in transportation is not recognized, it has no value and cannot come into use. If the railways decline to accord to this form of compression the saving in cost of transportation which it actually makes, or some reasonable part of it, that bale never can be offered for transportation in very large quantity.

Mr. Prouty also pointed out that recognition of the complainant's claim would redound to the advantage of several other owners of devices for making compact bales. So far from creating a monopoly,

it would tend to modify the semi-monopoly which the railroads enjoyed of compressing cotton *en route* in their own compresses.

It has already been noted that it has been the general practice of the carriers, upheld by the Commission, to give the same rates and classification to wheat and to wheat flour. In two cases,¹ however, which have been brought before the Commission that body has upheld the carriers in their practice of charging five cents more per hundred pounds for transporting flour from points in Missouri and Kansas to points in Texas than they charged for carrying wheat from the same points of origin to the same points of destination. The carriers made their defence partly on the basis of differences in the values of the two commodities and partly on differences in the cost of service. The Commission could not sustain these arguments, since they would have been applicable under any circumstances, and it was shown that the same carriers as were made defendants in this case were transporting wheat and flour in other directions at the same rates on both commodities, and such an equalization of rates, as we have just said, has frequently been upheld by the Commission.

The investigations conducted by the Commission in these cases showed that in both instances the five-cent differential rate on wheat had been made for the purpose of protecting the large and growing milling industry of Texas. The Texas mills it was said widened the market for Texas wheat growers but were at a disadvantage compared to St. Louis mills owing to higher costs of fuel, labor, and the like. The de-

¹ *Kauffman Milling Co. v. Mo. Pacif. R'y Co. et al.* 4 I. C. C. Rep. 417; 3 I. C. R. 400. *Mayor and City Council of Wichita, Kansas v. Mo. Pacif. R'y Co. et al.*, 10 I. C. C. Rep. 35.

endants claimed that the complainants were not injured by the existence of the differential since they could still compete in the Texas markets. The majority of the Commission decided to uphold the differential in the first of the above cases because of its long continuance; because the milling industry of Texas was in a flourishing condition and had had beneficial effects on raising the price of wheat in Kansas and Missouri as well as in Texas, and because the differential seemed necessary in order "to place the competitive milling interests upon a substantial parity."

Commissioner Morrison dissented from the conclusions of the majority of the Commission in this case. He said that the decision assumed "to put the millers of Texas on a parity with their competitors in the Texas markets, by depriving Missouri and Kansas mills of whatever advantages they have in their favorable location." This he pointed out was in direct conflict with previous decisions of the Commission.

In the second of the above cases the Commission abandoned its contention that the differential on wheat was necessary to maintain competition between Texas mills and those in Kansas and Missouri. On the contrary it declared that "the Commission has no more authority to place competing millers in different states upon precisely the same footing than it has to equalize conditions in all localities and in every industry." It nevertheless upheld the differential on the ground that many new and flourishing mills had recently sprung up in Texas as a result of an accidental crop yield and that to equalize the rates on wheat and flour would handicap these mills in their competition with the Kansas mills. The Commission therefore announced that it must "decline to disturb

relations of rates " since such disturbance " could scarcely fail to be injurious to important vested rights." It also declared that the maintenance of competition between the Texas mills and those in Kansas was a direct benefit to the Kansas farmers in that it tended to raise the price of their grain, and the Commissioners said: " Anything which increases the value of the products of the soil to the producer seems so desirable a result, that if the Commission was endeavoring to adjust the conditions investing various localities, that which led to the prosperity of the agriculturist must receive favorable attention."

Whether one looks at this case from the standpoint of the Texas millers or of the Kansas wheat growers it is apparent that the Commission's decisions were based on the special and peculiar interest of these particular classes of persons.

In spite of the fact that neither Los Angeles nor San Bernardino, California, is situated on the coast, the Commission decided in the case of *A. W. Holdzkom v. Michigan Central Railway Company et al.*¹ that the carriers from the East were justified in considering Los Angeles a " terminal point," enjoying the benefits of water transportation from the East and therefore entitled to the same rates as San Francisco received while San Bernardino must continue to pay the through rates to Los Angeles plus the local rates from Los Angeles to San Bernardino. The Commission set forth its reasons for permitting this discrimination as follows: —

In coming to this conclusion we have been largely influenced by the consideration that while this action upon the part of the carriers has certainly worked a preference in favor of Los Angeles as against towns like San Bernardino, it has at the same time bene-

¹ 9 I. C. C. Rep. 42.

fitted southern California as a whole. The result has been to transfer the wholesale business of southern California in so far as it is transacted upon the Pacific Slope, mainly from San Francisco to Los Angeles. Before Los Angeles enjoyed this rate San Francisco jobbers covered that territory. Now they have given place to the jobbers of Los Angeles, and in many instances San Francisco houses have established branches at Los Angeles. It is probable that this arrangement results in somewhat cheaper prices for southern California than would be secured by a distribution from San Francisco, since the cost at the two centers of distribution is now the same, while the expense of distributing from Los Angeles is somewhat less. While, therefore, Los Angeles has been benefited, it would appear that this whole section shares to an extent in such benefit, nor is it easy to perceive how San Bernardino has been materially injured since that city could not become a jobbing center as against San Francisco under original conditions.

The grounds for the Commission's decision are therefore the interest of southern California as a whole. That the decision, while favorable to the jobbers of Los Angeles and perhaps to the consumers of southern California, was opposed to the interests of San Francisco jobbers was a fact which apparently received little consideration from the Commissioners.

In all the cases which we have considered under the heading of class and sectional interests, the Commission does not seem to have been guided by what it terms "fundamental principles." The cases have been disposed of, as the Commissioners said in the *Kauffman Milling case*, "with a view to what is best for the public interests immediately concerned, and upon facts found to exist rather than upon theories of transportation." Perhaps the most fundamental consideration involved was the desire to preserve competition among producers or producing sections, and this the Commission has undertaken to do even when at times it has been necessary to depart from economic principles and to sacrifice in a measure the interests of the consumers.

VIII. FAIR RETURN ON INVESTMENT

During recent years there has been an urgent demand on the part of many writers and public officials that the Federal government attempt to make a valuation of the physical property of the railroads of the United States and that it also take steps to control the further issue of railway securities. This demand, representing what Professor Adams calls "the public interest in the property accounts of railways," as opposed to the interest of the railway management and the interest of the investor, "rests upon the fact that a reasonable rate for transportation services is a rate which contributes a reasonable return upon necessary investments."¹

The argument for a physical valuation of railway property and a limitation of railway securities may be briefly stated as follows. The railways are common carriers, concerned in the business of performing a service essentially public in character. Their corporate existence is furthermore due to franchises granted by the public authorities. In the performance of a public service their owners are not entitled to charge more than a fair return upon the actual capital invested and this can only be known when the value of the property has been ascertained. In the future the issues of railway securities should be made to correspond to the actual investment of capital. Rates in general can then be so regulated as to yield only normal rates on the capital investments and on the par value of the new stock issues.

¹ Twenty-first Annual Report on the Statistics of Railways in the United States (1908), p. 11.

1. *Development of the Theory*

This theory of rate making received but little attention during the early years of the existence of the Interstate Commerce Commission. It was, however, not entirely overlooked; it was dealt with, tho in a purely incidental way, in some of the earlier decisions. Thus in one case¹ where the complainants had urged that the defendant's rates on wheat were too high when compared to rates on the same commodity charged by other roads, and the defendant had pleaded as an excuse the high cost of constructing and maintaining the road and the low rate of return on its paid-up stock, the Commissioners had replied that the roads with which the complainant had made comparison

have a greater variety of local and way freights, and are not compelled to depend, as is the defendant, so largely upon what they receive for the transportation of any one local commodity, such as wheat. They, therefore, derive revenue from these other sources of local and way freights to a much greater extent than the defendant, and can with confidence rely upon them, and for this reason alone can safely make their rates less than the defendant.

A more significant utterance appears in the Commission's report on *Alleged Excessive Freight Rates and Charges on Food Products*.² The shippers had advanced the claim that the railway rates from the West should be so adjusted as to enable farm produce to be sold in the East at a profit. The Commissioners could not admit that the railroads were bound so to adjust their rates that "shippers may in all cases realize actual cost of production." Such a basis of

¹ *Milton Evans et al. v. The Oregon Railway and Navigation Co.*, 1 I. C. C. Rep. 325.

² 4 I. C. C. Rep. 48; 3 I. C. R. 93.

rate making they said "will hardly stand the test of fair dealing. It would compel those who invest in or operate railroads to assume and bear the losses resulting from the improvidence, mismanagement, or unprofitable employment of others." At the same time the Commissioners declared that the roads should offer such rates, if they are "fairly remunerative," as would encourage and warrant the movement of commodities and such a rule was particularly applicable to the staple agricultural commodities. The Commission was careful to state that in deciding what rates were "fairly remunerative" it must not be implied that a dividend on watered stock was to be included, and they laid down this further principle:—

In fixing reasonable rates the requirements of operating expenses, bonded debt, fixed charges, and dividends on capital stock from the total traffic are all to be considered, but the claim that any particular rate is to be measured by them as a fixed standard, below which the rate may not lawfully be reduced, is one rightfully subject to some qualifications, one of which is the obligations must be actual and in good faith.

Another limitation on the principle of fair remuneration is stated in one of the Standard Oil cases ¹ where it is said that a carrier

may establish its rates to yield fair remuneration for its services, subject to prescribed limitations, but it may not treat every division of its system serving a common territory as an independent property, and vary its rates to suit the conditions of each piece of property, and thereby arbitrarily exact charges that make a profitable market for one portion of its patrons and that exclude others similarly situated from the same market.

The limited use which the Commission made of the principle that rates must be so limited as to yield only normal returns on investment during the early

¹ *Rice, Robinson & Winthrop v. The Western New York and Pennsylvania R. R. Co.*, 4 I. C. C. Rep. 131; 3 I. C. R. 162.

years of its existence doubtless finds its chief explanation in the fact that nearly all of the earlier decisions had to do with rates on particular commodities rather than with an entire schedule of rates. Altho, as we shall see, the Commission has made a limited use of this principle in dealing with rates on a few important commodities, it has never been seriously urged by members of the Commission or others that this theory of rate making could be rigidly applied to determine what was a reasonable rate on a specific commodity carried a specific distance. The principle has found its widest application in those cases in which the Commission has had to consider the question as to whether or not a general advance in rates, or at least an advance on an entire class of commodities, by a single railway system or by several railroads acting in conjunction, was legitimate.

2. Rates in general

In seeking to make use of the principle that a reasonable rate is one that yields a fair return on capital actually invested, the Commission has been greatly handicapped by the fact that there has never been furnished to it any authoritative statement as to what is the actual capital investment of our railroads, either singly or in the aggregate, or as to what constitutes a reasonable rate of return on this capital. The United States Supreme Court in the *Nebraska Freight Rate case*¹ established the rule that a carrier is entitled to earn a "fair return upon the value of that which it employs for the public convenience," but this, in the absence of any standard for determining what is that value, is, as the Commission

¹ 160 U. S. 466.

says,¹ much like reasoning in a circle, since the value of a railway's property is in large part dependent on the rates which it is permitted to charge. The Commission expressed the opinion in this case that the cost of reproducing a railway's property could not well be made a test as to the value of the investment, tho it might furnish some assistance in determining that value. Even this standard of measurement is lacking, and the Commission stated the difficulties which it confronts in seeking to determine what constitutes a reasonable rate schedule in these words:—

It is plain that until there be fixed either by legislative enactment or judicial interpretation, some definite basis for the valuation of railway property and some limit up to which that property shall be allowed to earn upon that valuation, there can be no exact determination of these questions.

In the absence of such official standards the Commission in seeking to judge as to the reasonableness of a proposed general advance in rates has thrown upon the railroads the burden of proving that they were not prospering under existing rates. The most notable decisions of this sort were handed down only a few months ago and are still fresh in our minds; but the principles upon which the Commissioners acted in refusing to allow the recent proposed advances in freight rates are not new and need have caused no surprise to those who have followed the Commission's line of reasoning in earlier cases. In the case which we have just been considering the carriers had declared that rates had been reduced in bad times; the prices of materials and labor had risen with the return of prosperity; the roads hence were entitled to raise their rates. The Commission itself has so

¹ Proposed Advances in Freight Rates, 9 I. C. C. Rep. 382.

succinctly stated the argument of the carriers that its words deserve to be quoted.

The present prices of commodities are high, therefore they can pay a higher freight charge. Times are good and railroads should share in the general prosperity; but high prices of materials and labor add to the expense of operation and gross revenues must therefore be increased.

This argument, it will be observed, is a combination of cost of service and of value of service, or "charging what the traffic will bear" arguments. So far as the cost of service argument is concerned its validity would of course depend on the evidence as to increased costs submitted by the carriers. If value of service is, however, to be made the test, and if any meaning is to be given to this elusive term, it is hard to see why the carriers' argument is not conclusive. For in times of prosperity and high prices the railroads certainly do by means of the transportation of commodities increase the value of service both to producers and consumers. We have already seen¹ that the Commissioners permitted the increase in rates to be made in the case of iron and steel on the ground that the rates on these commodities had been reduced because of business depression.

With reference to other commodities, particularly grain, the Commission shifted its ground. It declared that it was not called upon to consider alone the question as to whether the proposed rate was reasonable when "estimated by the cost and value of the service, and as compared with other commodities," but that it must decide whether the rate was "reasonable in the absolute, regarded more nearly as a tax laid upon the people who ultimately pay that rate." This statement might seem to introduce into the Com-

¹ *Quarterly Journal of Economics*, November, 1910, vol. xxv., p. 36.

mission's decisions a new theory of rate making, viz. the tax principle so much emphasized by Professor Cohn.¹ That this was not the intention of the Commissioners, however, is shown by their further statement that every inquiry into the reasonableness of a given rate "involves the idea of some limit beyond which the capital invested in railways ought not to be allowed to tax other species of property."

While the Commissioners could not, in the absence of any judicial or legislative standard, declare just what the limit should be, they applied this apparently negative conclusion to the case under discussion in the following manner. The statistics of earnings and expenses of the leading lines covered by the investigation showed that these roads had shared in the general prosperity of the country simply by an increase of their traffic. Railway transportation being subject to the law of increasing returns, this increase of traffic had caused an increase in the net earnings of the roads. The investigation further showed that rates in general, and on grain in particular, had not been reduced during the period of financial depression. The Commission therefore held that rates long established, which had been fixed by competition and were fairly remunerative, could not be advanced merely in order that in this way the railroads might share in the prosperity of the country.

The report of an investigation made by the Commission *In the Matter of Class and Commodity Rates from St. Louis to Texas Common Points, etc.*² is in many respects analogous to the case we have just

¹ G. Cohn, *Die englische Eisenbahn Politik der letzten zehn Jahre*, pp. 65-84. For a discussion of Cohn's theory see Professor Taussig's *Contribution to the Theory of Railway Rates*, *Quarterly Journal of Economics*, vol. v., pp. 438-465.

² 11 I. C. C. Rep. 238.

considered. The roads in the Southwest had announced an increase in rates and gave as their reasons for the advance: (1) an increase in "the cost of labor, materials, and everything which enters into the construction and operation of a railroad"; (2) an increase in the prosperity of the country, in which it was said the railroads were entitled to share. As a proof of the increase in prices the railroads offered a comparison between prices paid in 1903 and those paid in 1897, to which the Commission made answer: —

It is evident that a comparison between the panic prices of 1897 and the inflated prices of 1903 would produce startling results of this nature and it is equally evident that such comparisons are utterly worthless for determining a legitimate basis for freight rates.

The Commission instituted an investigation of its own into the relative prices paid by the railroads for steel rails, equipment, fuel, and labor in the years 1892, 1896, 1902, and 1903 and concluded that "the total cost of moving a ton of freight one mile upon the lines of these respondents as a whole was probably as low in 1903 as it had ever been."

In answer to the claim of the carriers that they should share in the prosperity of the country the Commissioners replied: —

To the proposition that the railroads of this country are entitled to share in the prosperous conditions of the present we entirely assent. . . . When the claims of these respondents are carefully examined that is not at all the thing for which they contend, but rather that because the prices of the commodities which they transport have advanced the rate of transportation should also be advanced. To that we do not assent. The freight rate is not a commodity the price of which should ordinarily vary with the price of the commodities which are transported. A railroad may not advance its passenger fares simply because the people who ride are making more money. The question is rather whether the fare charged allows the carrier a fair return for its services.

The Commissioners admit that if the roads reduce a rate to enable a manufacturer to continue in business during a business depression "there is no reason why with the return of prosperity the rate should not be restored," but this was not the case with the advance announced. To show how illogical was the argument that the announced increase of rates was justified by the increase of prosperity the Commission quotes the argument of the representative of one of the roads that owing to the ravages of the boll-weevil in Texas his road did not get the usual amount of cotton for transportation and,

for these reasons it had become necessary to advance rates in order to obtain sufficient revenue with which to operate the road and pay a fair return upon the investment. Here, therefore, we have in the same case and by parties of the same general system a claim upon the one hand that these advances are justified by general conditions of prosperity and upon the other hand that they are justified by general conditions of adversity.

The way in which the roads should share in the prosperity of the country the Commission then proceeds to indicate.

Railroads should share in the general prosperity. They should do this partly by being able to advance those rates which have declined under commercial conditions. They should do it still more by the increased traffic which they obtain. In times of prosperity when money is plenty and business is good people ride more, buy more, new industries are being established and old industries are active, traffic increases and out of such increased traffic the railway obtains, by automatic action so to speak, without any advance in its rate a large share in the general prosperity.

Declining to admit, therefore, that the proposed advance was to be justified either by cost of service arguments or by increases in the values of the commodities transported, the Commission turned to the question as to whether the rates charged before the

advance was made were sufficient to allow the carrier a fair return for the services rendered. The statistics as to cost of reproducing the property and as to the increase in gross and net earnings between 1892 and 1903 showed on the whole favorable conditions. Most of the roads were shown to be earning six per cent or more on the cost of reproducing the property. The Commission nevertheless hesitated to issue an order for a restoration of rates to their former level, their hesitation being due to the fact that in spite of improved conditions the earning power of these roads was still below that of the roads in other parts of the country.

The final test is the actual result of actual operations and it cannot be denied that the financial showing of these respondents, especially those roads which operate in the state of Texas, is not favorable. The railroads embraced in this discussion are mainly confined to Groups VIII and IX [of the Commission's classification]. If these groups are combined and treated as one, the average net earnings per mile are much lower than those in any other group in the United States. The percentage of cost of operation to gross revenue is larger than in any other group in the United States. While many of these respondents are yielding a munificent return upon any fair basis of valuation, and while most of them are earning six per cent, at least upon the cost of reproducing the properties today, nevertheless it is true that many of them do not now and have not for years paid dividends to their stockholders. This is partly due to the fact of over capitalization and partly, perhaps, to the peculiar state of the law in Texas, which as applied to these railroads virtually requires that the net earnings be retained in the property, as previously explained. But in any view of the matter the fact cannot be overlooked that those Texas lines as compared with other roads in this country are poor.

While firmly convinced that the advances had been due to rate agreements among the carriers, the Commissioners concluded that a general reduction ought not to be ordered "unless it is perfectly clear that the rates in effect are unreasonable."

The statement just quoted from the Commission's decision that the rates might be too low since some of the roads had been unable to pay dividends on stock which was at least in part "water," might lead one to suppose that the Commission was ready to concede the right of a road to earn dividends on watered stock as well as on capital actually invested. We have already seen¹ that this is not the case. Additional proof, however, is furnished by two other cases² which have come before the Commission in which the plea was made that if rates were reduced the carriers would be unable to pay dividends. The answer of the Commission was practically the same in both cases. In the Danville case they said concerning the common stock of the defendant carrier:—

It does not appear that the persons to whom this stock was originally issued ever paid one dollar in actual value for it. It simply appears that the stock is out-standing. This is not enough. Something more is needed when a claim of this kind is set up than the mere fact of the existence and amount of capitalization.

The Commission has, however, gone farther than merely to hold that there is no obligation on the part of carriers to maintain high rates in order to pay dividends on stock which represents no real investment. In at least one case³ it has put itself on record to the effect that railway managers who have made unwise ventures are not entitled to exact unreasonably high charges from shippers in order that their roads may become profitable investments. The defendant in this case sought to justify a greater charge for a short haul than for a long haul on the ground that com-

¹ Above, p. 517.

² *Grain Shippers' Association of Northwest Iowa v. Ill. Cent. R. R. Co.*, 8 I. C. C. Rep. 158. *City of Danville v. Southern R'y Co.*, 8 I. C. C. Rep. 571.

³ *Cary v. Eureka Springs R'y Co.*, 7 I. C. C. Rep. 286.

petition necessitated a low rate for the long haul, while if the rate for the short haul were made equally low the earnings of the carrier would be insufficient to yield a fair return on the capital investment. The financial statements of the road for several years past were submitted in proof of this statement. The Commission had no authority to prescribe a rate for the future owing to the decision of the United States Supreme Court to that effect.² It nevertheless recommended a reduction of the short haul rate in this case and said: —

That transportation charges should be liberal until the earnings are fully sufficient for a fair return on actual investment will hardly be questioned, but it does not follow that rates long maintained and grossly discriminative must be continued and may be lawfully exacted year by year, tho it be assumed that railroad investment of property is so much more inviolable than other property that its owners must bear none of the losses or disadvantages incident to industrial and financial disarrangement, and that transportation charges are never excessive when the annual net earnings are less than the amount necessary to the reasonable annual income on such property and investment.

So far as a general schedule of rates is concerned, therefore, it may be said to be the opinion of the Commission that these rates may be only high enough to earn a fair return upon a *legitimate* investment of capital in the construction and operation of the road.

3. *Particular Rates*

A charge made for hauling a particular commodity or for the performance of a specific service may not properly be judged by the same standard as is applied to an entire rate schedule. Some rates need to be lower, while others may properly be higher than the

² *Maximum Rate Case.* 167 U. S. 479.

average rate needed to yield a fair return upon the capital investment. In the case of the *Central Yellow Pine Association v. The Illinois Central Railroad et al.*,¹ the Commission has well explained why in measuring the reasonableness of a rate on a given commodity different standards must be applied than are used to measure the reasonableness of an entire system of rates.

The defendants had attempted to justify an advance in the rates on lumber shipped from points in the southern states to places on the Ohio river and beyond, partly on the ground of an increase in costs of operation, but mainly on the ground that "lumber, considering its character and the conditions attending its transportation, was not yielding its proportion of the revenue required by the defendants to meet their expenses."

To this argument the Commission replied:—

The question of the reasonableness in this sense of a rate on a *single article* of traffic is one of almost insuperable difficulty. . . . The value of the entire property of a road employed for the public convenience can shed but little, if any light upon the question whether the rate on a single one among thousands of articles of traffic yields its proper proportion of a fair return on that value. The rate on one article of traffic may be reasonably high and the carrier fail to earn a fair return on the value of the entire property employed for the public convenience because of unreasonably low rates on other traffic, and *vice versa*, the rate on one article of traffic may be unremunerative or unreasonably low and the return to the carriers from its entire business may be fair or reasonably high, the deficiency under the rate on one article of traffic being made up by the rates on the balance of the traffic. . . . While the Supreme Court has undertaken to point out "certain elements" to be considered in determining the reasonableness of an entire system of rates, it has not named any as shedding light upon the reasonableness of a rate on a single commodity like lumber. It is evident that such elements are widely variant in the two cases. Where an entire system of rates is involved,

¹ 10 I. C. C. Rep. 505.

the principal, if not the only question, is whether the revenue yielded by the rates on all traffic is a "fair return on the value of that which is employed for the public convenience" — a question, the determination of which, — as we have shown, can have only a very remote, if any, practical bearing on the reasonableness of a rate on a single article of traffic. On the other hand, where the rate on a single article is in issue, the question (which could not arise in the former case) whether the rate is unjustly discriminatory or unduly preferential, may be presented, and the reasonableness of the rate depends upon the value, volume and other characteristics affecting the transportation of the particular commodity to which it is applied.

In the present case the majority of the Commission decided that neither the increase in the cost of operating the roads, nor the carriers' need for increased revenues, nor yet the increased prosperity of the lumber manufacturers, warranted the increase of rates. The advance in rates was due to concert of action between the carriers and this concert of action had eliminated competition. The Commission held that the rates should be restored to the level at which competition had left them.

Practically the same arguments were advanced and the same conclusions reached in another lumber case, that of *H. H. Tift et al. v. Southern Railway Company et al.*¹ The same principle is also expressed, tho perhaps less clearly, in several of the earlier decisions.²

The Commission has given weight, however, to the argument that need of revenue may justify a carrier in maintaining discriminately high rates under certain exceptional circumstances. Certain of the southern states have within recent years established uniform passenger rates of 3 cents a mile on the roads

¹ 10 I. C. C. Rep. 548.

² See for example *Jerome Hill Cotton Co. v. M. K. & T. R. R. Co.*, 6 I. C. C. Rep. 601. *Brewer & Hanleiter v. L. & N. R. R. Co.*, 7 I. C. C. Rep. 224.

within their borders. The roads have protested against lowering their interstate rates to the same figure, claiming that to do so would reduce their revenues to such a point as to yield them less than a fair return on their investment. Very reluctantly the Commission has permitted, in some instances, the higher interstate rates to remain in force. In one¹ of the cases the Commission said:—

A reduction of this interstate passenger fare would not contribute to the development of the section or increase materially the passenger business of the line. Reducing the fare to three cents per mile would render the earnings of this part of the system less than the average upon the whole system and less than the average of other roads in that part of the country.

In another case² where the Commission decided that the interstate rate complained of was not unreasonable the Commission added: "What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience."

Of more significance, however, is the Commission's statement in the case of *Board of Trade of the City of Hampton, Florida v. Nashville, Chattanooga & St. Louis Railway Company*³ where financial necessity was made one of the excuses by the defendant for accepting rates at competitive points which did little more than cover the operating expenses and which could therefore not be extended to non-competitive points. The Commission replied:—

Rates cannot be said to be reasonable which are not reasonably remunerative to the carrier, and rates which do not pay their full proportion of operating expenses, fixed charges and reasonable dividends are not *per se*, or in and of themselves, reasonably re-

¹ A. L. Arts v. Seaboard Air Line Railway, 11 I. C. C. Rep. 458.

² R. C. Brabham et al. v. Atlantic Coast Line R'y et al., 11 I. C. C. Rep. 464.

³ 8 I. C. C. Rep. 508.

munerative. While it may be that carriers, under certain exceptional conditions, are justified in accepting rates which pay anything in excess of operating expenses or the cost of movement, yet as a general rule all traffic should be made, if possible, to pay its due proportion of operating expenses, fixed charges and reasonable dividends.

It may then be held to be the well-established opinion of the Interstate Commerce Commission, as well as of the courts, that the test to be applied to determine the reasonableness of an entire system of rates is whether these rates yield only a "fair return on the value of that which is employed for the public convenience." Much still remains to be done in the way of measuring that value, but the Commission at any rate is clearly inclined to the opinion that it must include only *bona fide* investments of capital. Tho the same test cannot be applied with the same degree of accuracy in the case of particular rates, the principle may be said even here to have found recognition that unless exceptional conditions prevail, a particular rate must be so arranged as to cover the commodity's "due proportion of operating expenses, fixed charges, and reasonable dividends."

IX. GENERAL SUMMARY AND CONCLUSIONS

We have attempted in the course of these papers to set forth as fully as space would permit the theories of the Interstate Commerce Commission concerning the bases of railway charges. These views have been enunciated in the course of many decisions rendered during a period covering two decades. Since the membership of the Commission has been changing in the meantime, the theories do not always represent the changing views of the same individuals. In spite of the obvious difficulty in attempting to re-

state and classify other men's opinions, it is believed that the preceding discussion, in which the fundamental principles in each case have been given as frequently as possible in the Commission's own words, has not greatly misrepresented or exaggerated the views of that body.

We must now attempt such an interpretation of the Commission's views as shall show how the leading principles revealed by our classification may be in a large measure harmonized and reduced to their lowest terms. If this can be done in a satisfactory manner we shall be able to indicate the tendencies which are likely to be followed in our system of government-regulated railway rates in future years. It is perhaps unnecessary to say that the members of the Commission must in no degree be held liable for this interpretation. The present writer assumes full responsibility.

The Commission began its work with the idea that *value of service* was the underlying principle of railway rates. It was unable, however, to furnish such a precise definition or explanation of this term as would enable it to be used as a concrete measure of a reasonable rate. How uncertain is the meaning of the phrase and how different may be the interpretation of it given by the railway manager from that which the Commission clearly had in mind is shown by the use made of it to defend the rate on cotton charged by one of our southwestern roads.¹ The vice-president of the road had stated before the Commission that the rate in question had been made in accordance with the principle of "the value of the service." Upon being asked to explain the method of applying the principle in this case, he replied that two rules had been followed by his company: (1) "to give

¹ *Jerome Hill Cotton Co. v. M. K. & T. R. R. Co.*, 6 I. C. C. Rep. 601.

[secure] the largest revenue the traffic will bear"; (2) "to find a market for the stuff." Keeping both these principles in mind, he declared that "any rate is reasonable under which traffic will move absolutely. It all moves out every season. If it moves out, it must be a reasonable rate."

If this pragmatic explanation of what constitutes a reasonable rate be accepted as a fair indication of what we may expect when rates are fixed according to value of service, it is plain that we shall find that value of service is merely equivalent to the well-known monopolistic principle of charging that price which will yield the highest net return. It is also evident that the Interstate Commerce Commission could never consent to the use of such a principle as a basis for determining reasonable rates.

The great advantage which *cost of service* has over value of service is that it furnishes a concrete standard of measurement. It states a *quid pro quo* as a reason for making the charge. It is the standard of reasonableness which has been adopted in all our economic relations. To make charges less than costs would mean that other commodities or other industries would have to make up the deficiency, or else the railroads of the country would run at a loss. To charge more than costs, on the other hand, would mean that the railway industry was forcing other industries to surrender to it a portion of their legitimate earnings. The fact that it is universally accepted in other transactions as a test of reasonableness explains why the Commission has naturally turned to a consideration of costs when the equity of a given rate has been brought in question, and it also explains why railway officials have naturally made cost of service their defence whenever their rates have been attacked.

At the outset of its labors the Commission was not inclined to place much confidence in cost of service as a principle for determining rates. The feeling that rates fixed in this way would prevent the free movement of certain commodities explains in part the attitude of the Commissioners, but the main objection has seemed to be the practical impossibility of determining the exact cost of transporting a particular commodity. That there are obstacles—insuperable ones—to any direct determination of the costs of performing a specific service in transportation no one familiar with the subject would deny. It has not been by means of a direct determination of the costs, however, that the Commission has sought a solution. The method followed, as we have seen, has been that of comparison. The ascertainable costs of moving a certain commodity have been compared with the costs of moving the same commodity in a different manner or under different circumstances. The method of *comparative costs* does not yield absolutely accurate results but it is oftentimes sufficient for practical purposes and we must remember that economics, like law, does not concern itself with trifles.

The method of comparative costs has not always been applicable however. The Commission has then been confronted with the task of discovering some other means of measuring rates which would yield the same results as would be attained by a comparison of costs, were that method practicable. In some cases, as we have seen, *distance* may be used as a means of measuring the reasonableness of rates. Considered as the sole element in the determination of rates distance would of course yield unsatisfactory results; but it is nevertheless, as the Commission says, “in the absence of other influences a controlling

element." Its value as a measuring instrument lies not in the fact that it is independent of costs but that in the absence of other influences it reflects costs.

The same thing may be said of the effort of the Commission to preserve for a place its *natural advantages of location*. A place can have no advantage of location which a carrier is bound to respect other than that which is due to its ability to place its products on the market at less cost than can its competitors. Rates based on the principle of recognizing natural advantages of location are therefore true to the cost of service principle.

Even in the absence of these indirect methods of determining costs, the Commission has found it possible to reach the same goal by other methods. It is a fundamental principle of economics that free and untrammelled *competition*, operating over a long period of time, tends to reduce prices to a cost basis. We have therefore only to apply this principle to railway rates to see that rates which have been fixed by competition, provided that this competition has been of a normal sort, will be the same as they would be if all the costs of service had been calculated and rates had then been based on costs. In spite of all the inconsistencies and contradictions involved in the Commission's discussion of competition, — many of which, as we have observed, are due to an effort to preserve the spirit of the law, — we see running throughout the Commission's decisions a tendency to fix rates at the point where a normal and healthy struggle between competing interests has tended to leave them. Competitive rates are therefore true to a cost of service principle.

One other alternative has been presented to the Commission in certain cases where it has been unable

to calculate the costs of service and this, too, has been in accordance with well-known economic principles. What the economist always means by *cost price*, is that price which covers not only actual expenditures made in production but which also leaves a *normal rate of return upon all the capital invested*. In those cases, therefore, in which the Commission has been called upon to deal with a whole system of rates; where it would have been clearly impossible to have calculated all the costs; where even the comparative method was lacking because the increase of rates had been made general, and where competition was not present, — it has still been possible to ask whether these rates have yielded the same results, measured by their effect on earning power, as would have resulted if the cost of service principle had been applied.

In accepting different methods of measuring the reasonableness of railway rates the Interstate Commerce Commission has been confronted with the same difficulty that we find when we come to measure the size or magnitude of physical objects, and it has solved the problem in the same way. In some cases we use dry measure, in others liquid measure, in others cubic measure, and in still others measure by weight. In the metric system, the fundamental unit is the metre, but for practical purposes it is often convenient to use as the unit of measurement the litre or the gram, both of which are, however, based upon the metre. In the same way the Commission in its efforts to base rates upon cost of service has found it practically advantageous at times to use other methods of measurement, — distance, advantage of location, competition, fair return on investment; all of which in the sense in which they are employed by the Commission are merely expressive of cost relations.

Two other considerations emphasized by the Commission, value of commodity, and sectional or class interests, still remain to be dealt with. With reference to the last-named consideration it is hard to see how it can be made to fit in with any defensible theory of railway rates. Possibly the decisions rendered in most of the cases coming under this head are entitled to a degree of justification on the ground that the Commission was endeavoring to preserve competition among producers. Many of the cases in which value of commodity was made the basis of the Commission's decision might easily have been grouped under the heading of cost of service. This is because differences in rates, measured by differences in values of commodities, were allowed because the carrier was assumed to have accepted greater risks in transporting the more valuable commodities. In other cases where low rates were prescribed for low-grade commodities, for example such articles as are usually given commodity rates, it is obvious that the low rates could have been justified as easily on the principle that the costs of moving these commodities were low as on the basis of their low values. If the carriers had been able to show that it actually cost more to move a commodity having a low value than it did to transport one having a higher value it is doubtful if the Commission would ever have insisted that the less valuable commodity should receive the lower rate. In many cases we have observed that the values of commodities were allowed to affect rates because the Commission felt under obligation to maintain competition between establishments located at different points and engaged in turning out products in different stages of manufacture. Here again it is often possible to trace, indirectly through competition, a relation between

the value of the commodity and the cost of transporting it. It is of course not pretended that all cases in which value of commodity is selected as the basis of rate making can thus be brought under the cost of service principle.

If the conclusion be accepted, which these articles seem to support, that the tendency of the Interstate Commerce Commission's decisions is, on the whole, towards a cost of service theory of rate making,¹ there still remains the task of so stating a theory of rates as to bring in the various considerations which we have seen the Commission has emphasized as factors in rate making, and show how they can be related to the fundamental principle. It is perhaps well to say that nowhere has the Commission undertaken to state such a comprehensive theory of rate making.

1. In any system of government-made or government-regulated railway rates, it would seem that this fundamental economic principle should be kept

¹ These articles do not profess to discuss the decisions of the Commission since the Hepburn Act became operative or to consider the theories of other writers. It seems worth while, however, to call attention to the fact that a consideration of the later decisions of the Commission and especially its decision in the recent "advances in rates" investigation in western trunk line territory would do much to strengthen the idea that the Commission was tending towards a cost of service theory. Several books and articles by recent writers also tend to support the argument that cost of service is both practicable and desirable as a basis of railway charges. See especially the article by Commissioner Halford Erickson of the Wisconsin Railway Commission explaining the methods followed by that Commission; *The Basis of Reasonable Railway Rates*, Publications of the American Economic Association, Third Series, vol. ix (1906), pp. 95-102. See also *Standards of Reasonableness in Local Freight Discriminations* by Professor John M. Clark of Amherst College in *Columbia University Studies in History, Economics and Public Law*, vol. xxvii, no. 1; also Professor M. H. Robinson's articles on *Railway Passenger Rates* and *Railway Freight Rates*, *Yale Review*, vol. xvi, pp. 355-399; vol. xvii, pp. 121-153. Professor Robinson believes that there is a tendency towards the fixing of rates on the basis of costs determined by a scientific and elaborate system of cost-keeping, but points out that at present this is not practicable owing to the unscientific character of railway accounts. It may be said that rates on the eastern trunk lines have for some years been fixed in accordance with a cost of service theory. See Professor Ripley's article, *The Trunk Line Rate System: A Distance Tariff*, *Quarterly Journal of Economics*, vol. xx (1906), pp. 183-210; reprinted in *Ripley's Railway Problems*, pp. 309-332. See also Johnson and Huebner, *Railroad Traffic and Rates*, vol. i, ch. xxi, and McPherson, *Railroad Freight Rates*, pp. 70-78.

in mind: to perform the service of transporting persons and goods with the least possible expenditure of social energy.

2. One transportation route or one transportation system should never be allowed to take from another route or system, merely as a consequence of competition, traffic which the latter route or system can carry at less expense.

3. Rates should be so adjusted as never to take from a place its natural geographical advantages of location; but natural advantages should not be so construed as to mean monopoly privileges.

4. Railway rates as a whole should just cover costs as a whole, allowing for a normal rate of return on capital actually invested, a normal return for labor of all sorts, and for depreciation, but not for betterments. This would not mean that superior efficiency in railway management was not entitled to reap the rewards of its superiority in the same way it does in the ordinary industrial establishment where competition rules. On the other hand, the rule must not be construed to mean that any investment in a railroad, no matter how foolishly or recklessly made, is entitled to exact high rates from persons and industries along the line in order to earn current interest rates or dividends. Railway property is not more sacred than other property, nor are railway investors immune from the consequences of their own acts.

5. Each commodity transported should, as far as possible, be made to defray its own share not only of operating and terminal costs but also of the fixed costs and dividends. It is possible under modern accounting methods to determine these costs with an approximate degree of accuracy for the principal

commodities and classes of traffic. The rates on other commodities may be determined by comparing their ascertainable costs with those of the principal commodities, and to a lesser extent by a comparison of the relative values of the commodities.

6. Differences in distance may be made a test of the reasonableness of differences in rates where other conditions appear to be similar; yet the general rule must be kept in mind that tho the aggregate charge should increase as distance increases, the ton-mile rate should decrease.

7. Where the application of none of the above principles seems practicable, competition, which has been conducted in a normal manner over a period of several years, may be assumed to have established a fair relation of rates.

8. A reasonable rate is one which yields a reasonable compensation for the service rendered. If a given rate is reasonable in this sense, an increase in the price of the commodity or in the profits to the producer will not be a valid excuse for increasing the railway rate. The carrier will justly share in the increased prosperity of the producer by securing a larger traffic in this commodity.

The possibility of applying these rules to the business of railway transportation is proved by the fact that the application of every one of them can be shown by illustrations taken from the Commission's decisions. Their consistent application would mean that the railroads would neither tax the industries of the country nor have their own investments sacrificed; they would not build up one place or industry at the expense of some other place or industry; they would not take from some persons or commodities their proportionate share of the costs of transportation

and impose them upon other persons and commodities; and finally they would not by their system of rate making retard industrial progress or have their own development hindered by failing credit or lack of revenue.

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SCIENTIFIC MANAGEMENT IN THE OPERATION OF RAILROADS

SUMMARY

Testimony before the Interstate Commerce Commission, 539. — "Scientific Management" to save railroads a million dollars a day, 539. — What is "Scientific Management?" — Its success in manufacturing establishments, 544. — Practically untried in railroad operation, 545. — Santa Fe experiments inconclusive, 546. — Differences between manufactories and railroads in extensive range of action (549). — Character of public service (550), and labor union influence, 553. — Progress of railroads in economical operation, 556. — Further progress possible by a more general adoption of best methods of best railroads, 559. — Difference between Scientific Management as a system and the best railroad methods not one in kind but in degree, 560.

THE most striking feature of the recent public hearings before the Interstate Commerce Commission, in the matter of proposed increases in freight rates, was the charge of railroad inefficiency. Mr. Brandeis's clever turn in attacking the railroads in the quarter where attack was least expected called sharp attention to the subject of railroad management. The public was caught instantly by the dramatic statement that the railroads could save *a million dollars a day* through the adoption of a new system of scientific management, and their lively interest in it was kept up by newspaper and magazine discussion. In getting at the truth, the public had little constructive assistance from the railroads, and their disdainful attitude added to the first effect of the charges. The general impression, therefore, was that the railroads were needlessly deficient.

It is advisable to examine the charge of inefficiency apart from the rate question, which is now settled.¹

¹ In its decision of February 22, 1911, on proposed advances of rates by carriers in official classification territory, the Commission says: "It is difficult to see exactly

It is, perhaps, comprehensible that the railroads, already harried by public attack and suspicion, and now reproached unjustifiably, as they think, should be indignant at being presented with a new pill to swallow. Perhaps they may be pardoned for looking on it as a quack remedy. But it behooves the student of railway problems to examine the new prescription carefully and, so far as may be, impartially to inquire whether the railroads have some justification for distrust, to ascertain if the extent of waste is as great as suggested, to indicate some of the limitations on the adoption of any system of scientific management, and to suggest what may be learned with profit from its advocates.

It is necessary at the outset that we have a clear understanding as to what is meant by scientific management. To obtain it, we will go at once to headquarters. Mr. Frederick W. Taylor, consulting engineer, Philadelphia, is acknowledged as the dean of the efficiency experts and the originator of the new system. Mr. Taylor was conspicuously successful in his management of the Midvale Steel Company, where he was successively laborer, foreman, superintendent, and general manager. There his system was first worked out. In addition, he has also made an international reputation as the inventor of high-speed steel for metal-cutting tools and drills, an achievement in itself

what application the Commission can make in this case of this testimony [on scientific management]. The witness who apparently had most to do with originating and applying these methods testified that they were in actual operation in not over one tenth of one per cent of all the manufacturing establishments of this country. The system is everywhere in an experimental stage. To some extent it has been tried and is now being tried by our railways. The representatives of railway labor who appeared before us stated that these methods could not and should not be introduced into railway work. Upon this record, we can hardly find that these methods could be introduced into railroad operations to any considerable extent, much less can we determine the definite amount of saving which could be made. We cannot therefore find that these defendants could make good any part of these actual advances in wages by the introduction of scientific management."

sufficient to stamp him as a man of remarkable scientific attainments. The history of the gradual evolution of his system of shop management, his successful efforts to systematize and conserve labor, and the experiments in evolving high-speed steel, reads like a romance.¹

The fundamental principles of Mr. Taylor's system are definite, and are set forth by him as follows:¹ —

First. Each man in the establishment, high or low, should daily have a clearly defined task laid out before him. This task should not in the least degree be vague or indefinite, but should be circumscribed carefully and completely, and should not be easy to accomplish.

Second. Each man's task should call for a full day's work, and, at the same time, the workman should be given such conditions and such appliances as will enable him to accomplish his task with certainty.

Third. He should be sure of large pay when he accomplishes his task.

Fourth. When he fails he should be sure that sooner or later he will be the loser by it.

When an establishment has reached an advanced state of organization, in many cases a *fifth* element should be added, namely, the task should be made so difficult that it can only be accomplished by a first-class man.

Under the first principle, the difference between the Taylor plan and ordinary practice lies in the very careful study (by experts with stop watches) of each element in each task, so that definite information is available as to how long it should take. In ordinary practice, the fixing of piece-work rates is

¹ The writer attended Mr. Taylor's several lectures before students in the Graduate School of Business Administration, Harvard University. He has also seen the practical application of the new system in the plant of the Tabor Manufacturing Company of Philadelphia, where Mr. H. K. Hathaway, vice president of the company, took considerable time and pains to explain it thoroly. Scientific management has practically revolutionized the work of the establishment. Before its introduction there were more than 100 workmen at the machines and less than 6 men in the office; now there are 70 workmen in the shop and 30 men in the office and planning department and the output has been increased over 300%.

¹ From a paper read by Mr. Taylor before the American Society of Mechanical Engineers, June, 1903. Mr. Taylor is a former president of the society.

left to the judgment of the foreman or piece-work specialist, and the rates are often changed. Under Mr. Taylor's plan rates are inflexible unless conditions change.

In the application of the second principle, Mr. Taylor goes much further than is customary in standardizing tools and machine accessories, and systematizing the storing and distributing of materials, sharpening of tools, and the like. Two unique features are the planning department and functional foremanship, the latter calling for a corps of specialists, each with a single function, instead of the military type of organization, under which the foreman is responsible for the work and discipline of all the men under him and all the machines which they use. The planning department is designed to take out of the hands of foreman and men all the planning of work and how it is to be done. The workman is merely to act upon written instructions. To make sure that the work is properly performed, the supervision formerly divided between the superintendent and foremen is assigned to a number of persons: (1) the gang boss, who has charge of the preparation of all work up to the time it is set in the machine; (2) the speed boss, who sees that proper cutting tools are provided and machines properly operated; (3) the inspector, who is responsible for the quality of the work; (4) the repair boss, who sees that the workmen keep their machines clean and properly oiled; (5) the route clerk, who lays out the exact route by which each piece of work must travel from machine to machine; (6) the instruction card man, who has charge of making up written instructions for each job; (7) the time and cost clerk, who prepares accurate cost data; and (8) the shop disciplinarian, who handles all matters of discipline and adjustment of disputes.

The foregoing briefly describes what is meant by scientific management *in shops*. As a system, its details have been well developed and it is in successful operation in a number of important manufacturing establishments. For branches of railroad work outside the shops, however, no definite plan has been worked out, nor have any experiments been made to determine whether the principles or details of *shop* scientific management are superior to the best practice of well-managed roads in activities outside of the shops.

Mr. Brandeis, in his brief in the rate controversy, is not so definite. He describes scientific management as involving a careful analysis of each unit, and a comparison of each of the smallest steps in the process with an ideal of perfect conditions. The system means, he says, that before anything is done, it must be determined what shall be done, how it shall be done, and what it shall cost. Planning in advance, he explains, is the essence of the new system. It affords a stimulus to workmen in the form of a higher rate for greater output. It shifts the burdens of management from employee to the management, where they belong. It demands universal preparedness, full and complete records, and the ascertainment and application of the best attainable methods, practices, tools, and machines; and it means further that all tools, machines, and appliances shall be properly standardized and in perfect condition.

This summation is admirable so far as it goes, but it is incomplete. The features which fail to get mention are very important and probably are those upon which Mr. Taylor would place strong emphasis. Nothing is said about the long time required for patient and careful study in the introduction of the Taylor system, nor its delicacy of adjustment, call-

ing for thoro and painstaking effort. There is no reference to the difficulty of finding exceptionally skilled experts to specialize in the new field of transportation. The number of such experts is exceedingly small. These omissions in setting forth the scope and plan of scientific management are of serious consequence, since the public is only too ready to believe in new treatments, and as a result a swarm of unqualified or imperfectly qualified "physicians" is already appearing. The railroads are continually importuned to adopt schemes or devices which their originators believe will bring large returns, but which are obviously impractical or are likely to be vitiated in experience by some fatal defect. After many experiments of this kind, the railroads are naturally wary or skeptical. It is of the greatest importance, both for the railroads and the system of scientific management, that a clear distinction be made between the genuine thing and the poor copy. Amidst diversity and disagreement of doctors, railroad men, with large responsibilities, may well hesitate and insist upon proof before accepting the new doctrine.

To what sources may they turn for this proof? Unfortunately, a convincing demonstration, either affirmatively or negatively, is yet to be made in railroad operation. Only in textile mills, printing and binding concerns, and other manufacturing establishments, is there ample proof that scientific management is both practicable and profitable, that it has increased output and at the same time decreased cost. The testimony before the Interstate Commerce Commission is replete with concrete illustrations of substantially increased net returns, notably in the cases of the Yale & Towne Company, The Link Belt Company, Tabor Manufacturing Company, Brighton Mills, and Plimpton Press.

The only instance of the application of something similar to the Taylor system in railroad operation is the experiment made on the Atchison, Topeka & Santa Fe Railway in 1904-07 by Mr. Harrington Emerson, president of the Emerson Company of New York, who are standard practice and efficiency engineers. Mr. Emerson is the author of the inspiring book, *Efficiency*, and an earnest advocate of advanced methods of securing efficiency. He has had a wide experience in installing his system in industrial establishments and has devoted much time to developing a plan particularly adapted to railroad shops. The results, as described in articles by the editor of the *Engineering Magazine* and by Mr. Emerson himself in several articles and lectures, indicate on their face that the workings of the new system were remarkably successful. In selected items of expense and unusual units of cost, large savings are shown. In one minor item, the maintenance of belts, astonishing results were achieved by more scientific treatment from workman to purchasing agent.

It will be remembered that Mr. Emerson was the authority for the statement that the railroads, by the adoption of scientific management, could save a million dollars a day. While it is not clear from his testimony before the commission, Mr. Emerson has stated elsewhere how he arrived at his estimate of a million a day.¹ He took the last statistical report of the Interstate Commerce Commission and applied to each grade or class of employee and cost of materials the percentage of efficiency obtaining in railroad operation at this time, according to his observation and judgment. Thus he ascertained what

¹ The writer had the pleasure of discussing this subject personally with Mr. Emerson.

it would have cost to run all the railroads at 100% efficiency. He believes, for instance, that shops are but 60% efficient; section forces, less than 50%; stationmen, 60% to 80%. Applying the same process and reasoning to the cost of materials, he estimates, for example, that fuel consumption is but 50% efficient. It requires an average saving of approximately 23% in *all* items of expense to reach a million per day. If the saving applied only to the accounts specifically referred to, namely, section forces, shops, fuel, and freight stations, it would be necessary to reduce each of these by 50%. In either case, the operating ratio must be cut down from 66% to 51%. The result would be also that 310,000 workmen out of a total of 1,500,000 would be dispensed with.

Since this one example of efficiency methods is held up to the railroads for emulation, it is advisable to call attention to certain conditions, not emphasized in the descriptions of accomplishments; not with any thought of minimizing the good that was accomplished while Mr. Emerson was with the Santa Fe, but to explain why the results of the experiment are not convincing.

In the first place, the new system was introduced in the Santa Fe shops just after the collapse of a lengthy strike of machinists. Shop forces were demoralized and maintenance costs abnormally high, because of the inevitable employment of incompetent men to take the place of the strikers. A return to normal conditions, under any system, would have shown a marked improvement when results were compared with the former abnormal period.

In the second place, the introduction of high-speed steel for tools for cutting and drilling was coincident with the installation of Mr. Emerson's system, altho

not one of its distinct or unique features. High-speed steel was in general use before that time in other railroad shops; in fact, railroads were among the first extensive users of Mr. Taylor's invention. It is certain that the Santa Fe would have adopted the new tool steel, as other roads had already done, even had Mr. Emerson's system not been adopted. Mr. Taylor's new steel revolutionized the art of cutting metals and very much reduced shop costs. A large part of the Santa Fe saving, therefore, was due as much to high-speed steel as to the new system of management.

In the third place, Mr. Emerson's usual method of expressing the expense of locomotive maintenance is in cost per "road unit." This is an unusual and misleading average because it includes the weight of the locomotive as a factor and assumes that the repair cost varies directly with the weight. It assumes that an engine weighing one hundred tons will cost twice as much to repair as one weighing fifty tons. This assumption is not entirely incorrect; it is true that a heavy engine costs somewhat more to maintain than a light one. But the cost of repairs does not vary directly with weight. In this case, Mr. Emerson's unit gave a favorable showing to the new system, because of the purchase of a large number of new and heavy locomotives during the first two years under his régime. Naturally, the new engines did not call for the same measure of repair work as the older ones, which had kept up the cost in the previous period with which the comparison was made.

The unsatisfactory character of the ordinary accounting unit, "cost of repairs per locomotive mile," is recognized. Yet, with a knowledge of conditions, it is a better index than the Emerson unit, which

assumes that cost varies directly with weight. The most reliable indication of cost of maintenance is afforded after all by the "per mile" and "per year" figures in the annual reports. In the figures tabulated below, comparison is made between the Santa Fe and the Union Pacific, running through similar territory to the north, and also the Southern Pacific, running through similar territory to the south. It will be noted that the Santa Fe costs have been steadily higher since 1903 than those of either of the Harriman lines. Taking the average of the seven-year period following the introduction of the new system on the Santa Fe (1904-10), its "per mile" costs are 20% higher than the Union Pacific and 14% higher than the Southern Pacific.

COST OF LOCOMOTIVE REPAIRS AND RENEWALS

Year	per mile			per locomotive		
	Santa Fe	Union Pacific	Southern Pacific	Santa Fe	Union Pacific	Southern Pacific
1903	9.97c.	10.39c.	8.62c.	\$3,042	\$3,590	\$3,289
1904	13.42	11.23	10.33	3,772	3,565	3,588
1905	14.87	11.56	11.23	4,165	3,791	3,473
1906	11.08	8.61	11.26	3,101	3,068	3,531
1907	10.50	8.66	10.48	3,037	2,933	3,563
1908	13.74	10.70	10.79	3,714	3,108	3,234
1909	11.95	11.50	11.85	3,133	3,149	3,182
1910	12.87	11.72	11.63	3,832	3,656	3,551

In his testimony before the Interstate Commerce Commission Mr. Emerson referred to the time taken to give a locomotive shop repairs. By his system the time was reduced from sixty to thirty days. To the uninformed public this would seem a gratifying accomplishment. But even thirty days is too long. Many of the railroads do better. On the Chicago

& North Western, for instance, the average is fifteen days. In this case again the improvement is relative only. The final results are no better than the average of other roads, nor as good as those of roads which are very well managed.

Since the Santa Fe experiment lacks convincing proof, the railroad manager must turn to the records of the manufacturing establishments where scientific management is known to be eminently successful. The impulse of the railroad man, as well as of the manufacturer, is to acknowledge the benefits of the system elsewhere, but to doubt that it can be successfully applied to the complex details and difficulties of *his* business with which the efficiency experts cannot be intimately acquainted. His first answer usually is, "This may work elsewhere, but not in my plant." But open-minded railroad men, while admitting that they may be giving a stereotyped objection, and that in the course of years some roads may find features of value in the system of management thus rudely brought to their attention, may nevertheless urge with good reason that especial difficulties stand in the way. The success of scientific management in commercial undertakings does not in itself prove that the new system would be equally effective in railroad work. The essential differences between railroads and manufacturing establishments must be borne in mind. These differences may be summarized under four headings: (1) area and extent of activity; (2) nature of product or output; (3) relations with the public and the government; (4) relations with labor unions.

(1) The differences in area and extent of activity are obvious: the manufacturing establishment with its concentrated forces and intensive activity; the

railroad with its long lines of communication, scattered units of organization, and extensive range of action. Railroad forces, spread out thinly over the line, necessarily work under scant supervision. Section forces, stationmen, signal and repair men, car inspectors and oilers, work-train and way-freight crews, and many other employees located in small groups at intervals of two or three miles, must be left largely to themselves, and their work checked chiefly by inspection. It is obviously impracticable to afford the constant supervision which is such a vital part of the new system. In a manufacturing plant thousands of men may work in one group of buildings, subject to the supervision not only of gang bosses and foremen, but also of all officers and owners of the establishment. In contrast, compare the one item of section forces. Gangs of six to ten men are scattered over every section of three to ten miles, the average being one man per track mile. This attenuated line of two or three thousand laborers on a double-track road, say, from Boston to Chicago, a distance of more than a thousand miles, could be concentrated on one acre in a textile mill.

(2) With respect to the nature of product or output, there are also distinct differences between an industrial establishment (such as the Tabor Manufacturing Company), with a uniform output, and a railroad repair shop, where there is little uniformity in the work. The cost of the work in a railroad shop is a small part of total operating expenses.¹ Shop and repair work is *incidental* to the main function of producing transportation. The value or efficiency of railroad shop work depends upon how well it assists

¹ The cost of maintaining locomotives and cars averages about 18% of operating expenses.

in the safe and expeditious movement of passengers and freight. It cannot be systematized to the same degree as in manufacturing shops, where the character of the work varies but slightly. Oftentimes, too, it is much more important that railroad repair work be done quickly than at the lowest possible cost. This feature applies particularly to repairs made at the engine houses and outlying car inspection points.

In railroad shops which carry on the manufacture (as well as the repair) of locomotives and cars, it would be practicable to adopt a large part of Mr. Taylor's system. But such shops are relatively few in number. The great majority of the railroads find it cheaper to purchase their rolling stock, because the best use of the railroad shops and the mechanical department organization is to maintain, not to manufacture. It has been found that they cannot compete on even terms with an industrial concern which specializes in manufacture.

(3) Quite apparent, also, are the dissimilarities between railroads and private concerns in their relations to the public and governmental regulating bodies. A railroad is a public service corporation. The public rightfully demands that adequacy of service shall outrank the payment of dividends. A manufacturing establishment exists solely for profits. If it ceases to be profitable, it may close its doors or change the nature of its business. The operation of an unprofitable road must continue. It has two functions, public service and profit making; it may not neglect service to favor profits. Necessarily, therefore, methods are employed in the interest of public service even tho they involve economic loss, and would not be resorted to if railroads were operated as private industries.

For example, parallelling lines, trolley competition, or other changed conditions may make certain divisions, branches, or trains unprofitable; yet satisfactory service must be continued, with little thought of returns. The losses from such divisions, branches, or trains are perforce absorbed in the earnings of the trains which are better patronized. Again, the demand for prompt and regular movement of freight often results in cars being moved with a light load. If they were held for a full load, the regularity of the service would suffer. As a result only one third of the capacity of freight cars is utilized.¹ In other ways economies in railroad operation could be brought about at the expense of the service; but these are desired neither by the railroads nor the shippers.

The effect of governmental regulation is much more apparent in railroad operation than in private industries, and, while both proper and desirable, it adds to the cost of operation. Mr. Howard Elliott, president of the Northern Pacific Railway, recently² stated that the cost to the railroads of the United States for board and commission control amounts to \$85 per mile of road per annum, an aggregate of \$20,000,000. This regulation affects nearly every detail of operation. Tho justified by public policy, and apparently necessary to keep *all* the railroads up to a standard which the well managed might adopt without governmental requirement, it has an important bearing on any comparison which may be made between railroads and manufacturing establishments not so circumscribed.

For the safety of trains, again, every precaution must be taken to avoid accident. Methods which

¹ The average capacity of freight cars in the United States is 35 tons. The average ton miles per loaded car mile is 19.3.

² Address before the Minnesota Federation of Commercial Clubs, January 26, 1911.

might reduce costs but which would also add to the element of risk are necessarily barred. For that reason certain classes of work are performed under day rates rather than by piece work. It is more important to have the task well done than to make a slight saving in cost. One accident as the result of such apparent economy would offset the savings of a long time.

(4) Perhaps the greatest barrier to the introduction of any system designed to accomplish savings which will diminish the number of employees is the labor organization. Practically every branch of the railroad service is strongly organized and militant. The manufacturer has his labor problem also; but he can close down his plant or lock out his men if he sees fit. With railroads, resistance to demands considered by them as unreasonable must not be allowed unduly to affect service. Trains must be kept moving at any cost, and if men cannot be had to take the place of striking employees, or if, before a strike is declared, it is plain that resistance is useless,¹ the company must make the best terms it can, and maintain peace.

Any system or contrivance which has for its object the creation of competition among workmen, or which will cause them to exert themselves, is repugnant in principle to labor leaders. Its direct result, as they see it, is to "speed up," and to lessen the number of workmen. Their attitude is indicated by the strong opposition of the Brotherhood of Locomotive Engineers to the introduction of the Mallet compound locomotive. This type of machine is capable of handling very much heavier trains, but calls for no more effort and very little additional skill on the part of the engineman. The organization held out strongly

¹ This was the situation a year ago on the Baltimore & Ohio, Lackawanna, and New York Central roads.

for double pay, on the theory that the Mallet engine does twice the work of an ordinary engine and, if ordinary engines were used instead, double the number of enginemen would be necessary. The issue came near precipitating a strike on all the western lines last fall, but was finally settled by mediation under the Erdman Act, the enginemen receiving a bonus of \$1 per day over the highest existing rate, instead of double pay as demanded. This settlement, however, will hardly be permanent. Opposition will probably continue and the question will undoubtedly cause friction in future negotiations between the railroads and their enginemen.

Of similar significance are the organized efforts of conductors and trainmen to prohibit double-heading. By this is meant the practice of running two engines on a freight train so as to increase its length. The resulting decrease in the number of trains and the consequent smaller number of train crews are opposed by the men.

The year 1910 saw the successful culmination of an ambitious plan to "standardize" the wages of conductors, trainmen, and yardmen in the eastern states, that is, to set a uniform rate per day, per hour, or per mile for each class of service, regardless of local conditions.¹ The road with the highest wage scale (the Baltimore & Ohio) was selected as the battle ground, and the entire forces of the train-service brotherhoods focussed upon it in a demand for new and unreasonably high rates. To prevent a strike, the railroad invoked the aid of the Board of Mediation (under the Erdman Act), and the award, while not granting the rates demanded, carried with it substantial increases over rates already considerably higher

¹ See a paper by the present writer on "Standardizing the Wages of Railroad Trainmen," *Quarterly Journal of Economics*, November, 1910.

than those of other roads in the East with distinctly different operating characteristics. The new basis was then in turn forced upon practically every road in eastern territory. The increases in New England averaged between 20% and 30% and in some cases exceeded 50%. At the same time long-standing differentials between different grades of employees were seriously disturbed. Throughout, the new wage basis and working rules (prescribed partly by governmental mediation) are far from scientific or equitable.

At this writing (April, 1911) the boiler makers of the New York Central lines have been on strike for ten weeks because of the introduction of piece-work rates at Collinwood, Ohio, on the Lake Shore Railway. Undoubtedly, former abuses of the piece-work basis have much to do with the determined opposition to its introduction in this case. Yet the same opposition would probably have occurred if it had been the Emerson bonus plan used on the Santa Fe. In fact, the head of the strongest organization in railroad service is reported as having said that the bonus system and his organization could not exist together on any railroad.¹

These difficulties, serious as they are, may be met by experts. But the railroad man sees no definite plan for the application of the new "principles"; and he has a fondness for the concrete. After studying scientific management as applied to shops he realizes that when similar efforts are made to extend it to the whole line of railroad operation, long and expert study will be needed, and new and unsuspected modifications of the system must be made to meet the exacting conditions of railroading.

¹ Warren S. Stone before the National Civic Federation, January 12, 1911.

The technical record of railroads in the United States is creditable. They have had to meet exceptional difficulties. In their effort to keep pace with the commercial development of the country, a policy of expediency has in many cases justified standards of construction, maintenance, and operation which would have been considered faulty in an older country, like England, whose railroads came after, not before, her industrial growth and dense population. But in the past two or three decades many deficiencies have been corrected and the work of eliminating other imperfections is progressing.

In the interest of a clearer understanding of the situation by the public, it would have been worth while for the railroads to offer more of constructive evidence to show that altho scientific management, as a system, has not been adopted by them, yet the principles of sound business management have free play in a large number of shops and other railroad operating activities. So far from being ignorant as to costs, many roads have statistical departments which compile and disseminate information upon every detail of operation, so that each unit of efficiency may be compared with other units, or with the same unit of another division, another railroad, or another period. Instead of being out of date in shop equipment, or behind the time in shop practice, they are, on the average, in advance of manufacturing establishments. They might have shown further that railroads, while far from perfect, are constantly improving in efficiency; that railroad officers, both of the so-called "practical" school and those who are graduates of colleges and technical schools, are earnest in their effort and have ample incentive to operate economically. Railroads believe in and practise the

free and frequent exchange of ideas by associations and clubs which include every branch of the service. In fact, they are unique in having so few secrets concerning operating methods, and in their willingness to tell of, hear about, and profit by their mutual experiences.

As an illustration of the work of one association, witness the monthly reports of the Car Efficiency Committee of the American Railway Association. The statistical exhibit, showing every detail of operation and revenue connected with freight movement on every railroad in the country, is a convincing example of the scientific thoroughness with which such information is compiled and distributed for mutual benefit. Every department has its association doing similarly scientific work. As other instances, take the Railway Engineering Association and its careful studies and experiments in perfecting rail design and cross-tie preservation; the Master Car Builders' Association and its exhaustive tests of air-brake apparatus; the Master Mechanics' Association and its painstaking efforts to evolve a perfect super-heater and mechanical stoker; and the Railway Signal Association and its thoro-going work of standardizing the art of signaling.

There may be ground for the impression that railroads are in a class by themselves in an attitude of self-sufficiency, that is, a belief that they can learn little from the experience or ideas of those outside the railroad circle. Yet that this is not altogether true, and that the railroads not only welcome but seek assistance from outside experts, is shown by the establishment of the Bureau of Explosives. This bureau was organized under the auspices of the American Railway Association about five years ago by

Colonel Dunn of the ordnance department of the United States army, working closely in conjunction with the late Dr. Dudley (then chief chemist of the Pennsylvania Railroad) and a committee of other railroad officers from different sections of the country. The American Railway Association realized that they did not have a man within their ranks with the same wide knowledge of the characteristics of explosives and the best manner of handling them, and were glad to secure Colonel Dunn's valuable services. He has accomplished much in organizing a system and formulating rules of inspection which have reduced to a very large extent the accidents formerly frequent in the transportation of this dangerous class of freight.

In the committee work of the Railway Engineering Association, Master Car Builders, Master Mechanics, Signal Engineers, and other railroad technical associations, the coöperation and active assistance of outside experts is sought. There are eleven university professors on the various committees of the Railway Engineering Association. In the active work of the railroad mechanical associations there are as many more, notably Dean Goss of the University of Illinois, Professor Hibbard of the University of Missouri, and Professor Benjamin of Purdue University.

The railroad man, knowing how keen is the anxiety of his profession for improvement and vigilance, has been and is proud of the achievements of American railroads. He believes that railroad efficiency is higher than the average in manufacturing establishments, and can hold its own with any line of enterprise in the United States. He thinks, too, that in the recent rate hearings the railroads should have been measured not with the exceptional industrial

establishment, but with the average. He recognizes, none better than he, the existing deficiencies in railroad management; but that they are greater or more flagrant than those in other large undertakings he will not admit. The extended area of railroad activity and the problem of adequate supervision make it difficult to secure high efficiency and use of materials. The tendency of labor union policy is increasingly to trammel the manager. He is also hampered by the difficulty of securing competent men in supervisory positions. Expert knowledge is not required to point out losses and inefficiencies. They are apparent. But criticism should be accompanied by practical remedial suggestions.

The history of American railways shows that their progress has been steady and substantial. A comparison of any two periods ten years apart will reveal impressive increases in efficiency. The net train load, for example, has increased nearly fifty per cent in the last ten years. Such advances in nearly every case have been the result of development and improvement of existing methods and facilities. The new and improved have been the adaptation of the old. And judging by this steady improvement in the past, it may be expected to continue in the future.

The solution of the problem of how to effect further economies and yet maintain good service seems to lie in a more rigid application of the railroad's own kind of scientific management and a continuation and enlargement of the best practices of the best railroads, so that the operating results of the least economical may approach those whose efficiency is marked, and these in turn set new and higher standards. *A new system is not needed so much as a more determined, and a more general application of the sound and business-like*

methods which have already been found effective in railroad work.

After all, there is little essential difference between the aims and accomplishments of scientific management as advocated by the new experts and scientific management as practised by the exceptionally well-managed railroads. As a system, it means a careful study and analysis of each element of operation, and the application of the methods best adapted to bring about the best results under the given conditions. Many railroads are doing this successfully; others are doing it in part. In the nature of things, however, their efforts have been directed more to the "high spots" or to those features of operation which are most in need of correction or which promise the largest or quickest returns. Scientific management, as a system, takes a broader view and requires that the same careful study and treatment be given to every detail of operation as is given, say, to the subject of train loading. Obviously, there is a point where this would be unprofitable, — where the cost of the system would exceed the saving.

The real difference, then, between the efficiency experts and the railroads in their conception of scientific management is not in kind but in degree. To find a common ground means mutual concessions. On the part of the efficiency expert it will require less stress upon "system," "principles," "dependent sequences"; it will require more knowledge of the practical problems of railroads, more respect for what the railroads have accomplished, and less exaggeration and generalization concerning waste and possible savings. On the part of the railroad a more receptive attitude is needed for suggestions from the outside and a recognition of the fact that, notwithstanding

commendable progress in operating economies, much yet remains to be accomplished.

Among the important features of Mr. Taylor's system of shop management, the principle of time study might well become a part of the practice of any railroad shop with a piece-work basis. The piece-work schedules of today are generally an evolution from "cut and try" methods. Their defects are recognized. Mr. Taylor's second principle, of standardized conditions, is equally important, and many railroad shops come reasonably close to standard practice.

But apart from shop operation, other and greater avenues of economy are being earnestly studied. The delays and red-tape obstruction to local initiative,¹ will yield to some plan of decentralizing authority, such as is now being tried on the Harriman lines. There are undoubted economies in further standardizing of equipment and materials, as well as in improved methods of storing and distributing supplies. There is promise of economy in the experiments now being made by the American Railway Association in clearing-house accounting for joint use of cars. A substantial saving in fuel may be made by a more general adoption of the methods of the roads having the best fuel records. And throughout the service there is crying need for more and better supervision.

Better supervision calls for better men, and to that end the educational activities of the railroads should

¹ Mentioned by W. M. Acworth, the English economist, as a defect in American railroad organization. In the same statement, made on the eve of his departure February 1st last, he expressed surprise that the newspapers should give so much space to criticism of railroad efficiency. In his opinion American railroads are the most efficient in the world. He believes that the skeletons in the railroad cupboards have all been buried and that now the roads "would do well to open their cupboards and let the public see how sweet and clean they are."

have wider scope and more effective organization.¹ A system of management is not needed so much as managers. The system is not as important as the man. A good system will not altogether save a poor manager, nor will an imperfect system altogether hold back one who is ambitious and able. Mr. Taylor himself recognizes this in his statement, "the first object of any good system must be that of developing first class men."²

Except in the important particulars of time study and functional foremanship, the system advocated by the experts and the system practised by the railroads are not very far apart. Both have for their object that which is desired by the railroads and the public, — ability to give good, safe, and economical service. And if achieved either by an improvement of present methods, or by an adaptation of the new system, private management of railways will have strengthened its claim to continuance.

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¹ J. Shirley Eaton, in "Education for Efficiency in Railroad Service" (1909), says: "In the course of railroad development, there was a first era, which was the era of railroad building. Any railroad was better than a wagon road. There was next an era of coördination of the railroad service and finance to the commercial and financial conditions as a whole with which the railroads were called upon to deal. This was the time of the traffic organisation and railroad consolidation. Next came the era of internal adjustment on the physical and mechanical side — perfection of machinery, cutting down grades, strengthening bridges, increasing the train unit. And now has come the sociological adjustment. The human part of the machine is quite as vital as the steel and wooden part in producing efficiency, and so in increasing the income."

² American Magazine, March, 1911, p. 570.

REVIEWS

THE PUBLICATIONS OF THE NATIONAL MONETARY COMMISSION

"To secure an organization of capital and credit by which confidence can be firmly established and credit maintained under all circumstances and conditions, is the task committed to the National Monetary Commission."¹

This statement by Senator Aldrich indicates the broad fashion in which the Monetary Commission conceives its task. By way of preparation, the commission early decided to examine into the banking experience, not only of the United States, but also of foreign countries. To this end it engaged a number of economists, financial writers, and bankers to prepare monographs upon topics of especial importance, and it has given these monographs to the public as fast as they have been completed. What practical use the commission can make of this large mass of material, in framing new bills for submission to Congress, remains to be seen. But certainly economists interested in currency problems will find the publications of the commission a most valuable addition to their literature.

The publications already received deal with banking and kindred matters in England, France, Germany, Austro-Hungary, Russia, Switzerland, Belgium, the Netherlands, and Sweden, the United States, Canada, Mexico, and Japan. Other monographs have been announced upon banking in Italy. In addition, there are a number of miscellaneous contributions which deal with banking and fiscal problems in several different countries.

¹ An address by Senator Nelson W. Aldrich . . . on the Work of the National Monetary Commission, p. 3. This address, like all the other publications referred to below, is issued as a Senate document by the Government Printing Office, Washington.

The English Banking System by Hartley Withers, financial editor of the *London Times*, describes lucidly the complicated relationships among the Bank of England, the joint-stock banks, Scotch banks, private banks, accepting houses, savings banks, and discount companies. As his title implies, Mr. Withers sees the English system as a whole, so that his monograph admirably supplements the numerous accounts of the Bank of England. It has the advantage over Clare's *Money Market Primer* of being up to date. In fact, its most formidable rival is another book by Mr. Withers, *The Meaning of Money*.

Sir R. H. Inglis Palgrave contributes a *History of the Separation of the Departments of the Bank of England*. Like all his work, this paper is exceedingly thoro. Liberal extracts are published from the evidence taken by Parliamentary committees upon the proposal to separate the departments, from speeches by Sir Robert Peel and others, and from the correspondence between the government and the bank on the three occasions when the limiting clause has been suspended. The writer concludes that "the adoption of the arrangements of the Act of 1844 cannot be recommended to any other country."

Under the title *English Banking Organizations*, Mr. Ernest Sykes describes briefly the Institute of Bankers, and the Central Association of Bankers. More interest attaches to the account of *The London Bankers' Clearing House*, by its honorary secretary, Robert M. Holland. Mr. Holland has collected the meagre scraps of evidence about the origin of the practice of clearing checks in the eighteenth century. The gradual expansion of the clearing house, the simplification of its methods, the admission of the joint-stock banks, and later of the Bank of England, he is able to describe in detail. He appends tables showing the volume of business transacted in each year since 1868.

But the most valuable service which the Commission has rendered to students of English banking consists in having induced the *London Economist* to bring together in systematic form its periodical reports upon the condition

of banks and the state of the money and exchange markets. The value of these data has long been recognized, and not a few laborious efforts have been made by investigators of special problems to compile tables from the weekly issues or the numerous "supplements." At last the Monetary Commission has supplied the initiative which the *Economist* lacked, and the whole body of data has been made readily accessible. The inclusion of an elaborate set of tables compiled by Sir R. H. Inglis Palgrave, much like those published in his book upon *The Bank Rate and the Money Market*, enhances the value of the collection. Further, these English tables have been wisely published in one volume with corresponding data for France and Germany.¹ Nowhere else can be found so extensive and so reliable a record of the development of banking in these three countries, and the course of the money markets in their capitals. Accordingly this volume will prove indispensable to foreign as well as to American students of the subject. It is to be hoped that in future the *Economist* will publish annual compilations in which the present tables will be kept up to date.

M. Albert Aupetit, head of the Department of Economic Studies in the Bank of France, has been engaged to prepare a general book upon *The French Banking System* corresponding to Mr. Withers's volume for England. This number has not yet come to hand; but the rest of the projected French material is complete.

Professor André Liesse of the Conservatoire National des Arts et Métiers writes of the *Evolution of Credit and Banks in France from the Founding of the Bank of France to the Present Time*. As the title suggests, his volume is far from being confined to the fortunes of the central institution. It contains references, necessarily brief, not only to the growth of other banks, but also to those business conditions, public events, and national habits which have done so much to shape the development of French banking.

¹ Statistics for Great Britain, Germany, and France, 1867-1909.

On the critical side, Professor Liesse has more to say of the defects of the French system than of its lessons for the United States. At present he thinks there is need of more banks devoted to supplying loans for the development of industrial enterprises — a type of business which the great credit companies avoid, and which the Banque de Paris et des Pays-Bas transacts only for large concerns.

The most interesting feature of *The Bank of France in its Relation to National and International Credit*, by M. Maurice Patron, is a discussion of the method of treating crises. M. Patron says that the bank's traditional method of checking a serious outflow of gold by charging a premium upon gold has not been applied since 1897. Instead, the bank has relied upon the policy of extending loans to foreign institutions — particularly the Bank of England. The theory is that the enormous specie reserves of the Bank of France adequately fortify the country against domestic crises. All that France need fear is the reflex influence of foreign storms. Hence it is to the interest of the country that its central bank shall afford timely assistance when the international money market is strained to the danger point. Even then the bank does not extend help directly to the cities most affected, but to London, the great clearing house, whence the French gold flows readily wherever it is most needed. The reader will doubtless ask why, if M. Patron is altogether right and altogether candid, Paris has not become a free market for gold in the same sense as London. If the Bank of France raised no obstacle to withdrawals, why did not French gold go directly to New York in 1907? Does the bank have other means of obstructing exports, not less effective than the charging of a premium?

There is no one more competent than M. Alfred Nymark, editor of *Le Rentier*, to speak of *French Savings and their Influence*. He puts the annual savings of French investors at not less than three hundred to four hundred million, dwelling complacently upon the fact that most of this huge sum is provided by the hundreds of thousands of

families in modest circumstances. "France is a country of financial democracy." This wide-spread spirit of thrift M. Neymarck holds to be the chief cause of the nation's vast reserve of gold and of the stability of French banks, whose "supremacy . . . in national and international finance is today undeniable."

Another aspect of French finance is treated in *The History and Methods of the Paris Bourse* by M. E. Vidal, editor of *La Cote de la Banque et de la Bourse*. This book will interest students of economic history, for it goes back to the Middle Ages and traces the development of the bourse rather fully through the 17th and 18th centuries. At present M. Vidal thinks that the bourse is laboring under the burden of its long past. Stock-brokers still enjoy monopoly privileges, tho the reasons which justified their establishment during the Revolution long since ceased to exist. Free access to the profession of stock-brokerage should be granted to every one, in his opinion, tho the exercise of the profession should be subject to strict legal regulation. But he admits that the obstacle presented by the vested interests which have grown up under the existing system is difficult to surmount.

Finally come the statistics of banking in France, prepared by MM. Aupetit of the Bank of France and Lefevre of the Crédit Lyonnais. The report includes weekly statements of the Bank of France from 1889-1908, and yearly statements of the other leading banks for a similar period, besides extensive tables of discount rates, gold movements, prices of foreign exchange, etc.¹

"To my mind," said Senator Aldrich in the address already quoted, "the [banking] system of Germany is for us the most interesting of any, because the German Empire has very largely the same industrial and commercial interests that we have in the United States."² In accordance with

¹ One error has caught my attention. The transactions of the Paris Clearing House should have the caption "years beginning April 1," not "years ending March 31"; p. 299.

² P. 8.

this view, the Commission has published much more material upon banking in Germany than upon banking in any other foreign country.

Dr. Koch, formerly president of the Reichsbank, has edited a collection of the *German Imperial Banking Laws*, supplemented by the laws and regulations relating to the Berlin Stock Exchange. An introduction and elaborate notes facilitate the use of the volume by students unfamiliar with the details of financial history and practice in Germany. Dr. F. W. C. Lieder's translation of *The Reichsbank, 1876-1900*, — the well-known and highly valued book issued by the Reichsbank at the close of its first quarter century, — describes fully the working of the system created by the laws. The recent modifications of both law and practice are abundantly covered by the ponderous volume on the *German Bank Inquiry of 1908* and by the series of articles on the *Renewal of Reichsbank Charter*. The first is a translation of the stenographic report of the proceedings of the Bank Inquiry Commission upon all the topics which it discussed, except the advisability of legislation in regard to the security and fluidity of the investments of deposits. The second is a translation of articles and documents relating to the work of the commission and its results. Taken together these four volumes make readily accessible all the sources of first-rate importance on the history of the Reichsbank since its foundation. So thoroly has the work been done that no less than three translations of the Bank Act of June 1, 1909, may be found in as many volumes!¹

The *German Bank Inquiry of 1908* affords an opportunity to compare the methods by which amendments of the banking laws are prepared in Germany and in the United States. The German commission had 25 members, including economists like Wagner and Lexis, and men of affairs, — members of the Reichstag, manufacturers, bankers, judges, merchants. It was presided over by the president of the Reichsbank, Herr Havenstein. The American commission has

¹ *German Imperial Banking Laws*, pp. 128-134; *The Reichsbank, 1876-1900*, pp. 357-362; *Renewal of Reichsbank Charter*, pp. 263-268.

17 members, all from the Senate or the House of Representatives, but not all conversant with banking. The task of the German commission was definitely specified by a brief list of questions: Should the capital of the Reichsbank be increased? Should the tax-free note issue be enlarged? How can the Reichsbank best protect its gold reserve? Should the bank seek to draw specie from the domestic circulation into its vaults? Should means be sought to diminish the credit demands made on the Reichsbank by general business or by the Imperial Government? The task of the American commission is far wider and less definite—to plan a reform of the banking system. The German commission carried on its work by examining expert witnesses and by discussions among its own members. The American commission has heard a few witnesses and presumably held some discussions; but it has laid far more stress upon the collection of the materials which constitute its publications. The German commission was appointed in April, 1908, examined witnesses in May, began its own deliberations in June, and formulated its conclusions in October. The law based upon its labors was passed June 1, 1909. The American commission was appointed a month later than the German, but has not yet presented its bill.¹ That it should take more time is due partly to the greater magnitude of its task. But even if they had to face the American problem, would the highly efficient German experts still be sitting?

Abundant as is this German material, it contains no general sketch of the banking system as a whole. The nearest counterpart to the books by Withers and Aupetit for England and France is the volume of *Miscellaneous Articles on German Banking*. Robert Franz, editor of *Der Deutsche Oekonomist*, sketches "The Statistical History of the German Banking System" since 1888; W. Mueller, a director of the Dresden Bank, contributes several lectures on the organization of credit; Wittner and Wolff describe

¹ Senator Aldrich's "Plan," mentioned at the end of this review, does not profess to be more than a tentative basis of discussion.

the giro and check systems; Melchior dilates upon the advantages of the liberal fees paid to bank directors in Germany; and, finally, several writers provide accounts of the different kinds of banks for which Germany is notable — land mortgage associations, agricultural improvement banks, coöperative credit societies, *Darlehnkassen*, etc. More than half of these articles are translations from the *Handwörterbuch der Staatswissenschaften* or from the economic journals; but it is a distinct gain to have all this information assembled between two covers and put into English.¹

The German statistics are compiled by the Centralverband des Deutschen Bank-und Bankiergewerbes, the Reichsbank, and the *Deutsche Oekonomist*. Like the English and French figures, they constitute the most complete available record of banking operations for their country. So far as possible, all the different kinds of banks are included, and detailed figures are given for discount rates, prices of foreign exchange, gold movements, clearings, etc.

Swiss experience merited especial attention from the Monetary Commission because of the recent establishment of a central bank. Of all European countries, Switzerland longest maintained a decentralized banking system with substantial freedom of note issue. For a long time the problem of reorganization on the model of her great neighbors has been a lively issue in politics. The financial interests of many cantons in the existing note issues, dissensions between the advocates of a purely government and a purely private bank, and jealousies among the various towns which hoped to secure the head office frustrated several attempts at reform. But at last in 1905-06 a compromise bill was passed, establishing the Swiss National Bank. The capital was fixed at 50 million francs, of which the cantons were allowed to subscribe $\frac{2}{3}$, the old banks of issue $\frac{1}{3}$, and the public the remainder. An elaborate system

¹ Dr. J. Riesser's *Great German Banks and their Concentration*, announced by the commission as a number of their series, has not been received.

of compensation to the cantons for the loss of their revenues from note issue was incorporated in the plan. A gradual withdrawal of the notes of the 36 banks of issue already in the field was required within three years after the National Bank began operations on June 20, 1907. No restriction was imposed upon the amount of notes to be issued by the new institution, except that it should keep reserves of not less than 40%. Further, the bank was required to act without charge as depositary and disbursing agent for the Confederation.

The material published by the Monetary Commission includes a bad translation of Dr. Julius Landmann's history of banking in Switzerland, the text of the law establishing the new bank, and various brief papers and reports regarding its operations to the end of 1908. Altho the bank began business just before the great crisis of 1907, its capital was over-subscribed and the necessary readjustments of Swiss business were effected without serious difficulty. The bank's profits in 1908 were not sufficient to pay the indemnity allotted to the cantons; but the management ascribed this failure chiefly to the depression of business. On the other hand, the management takes credit for having prevented the Swiss discount rate from rising above 5½% when even the Bank of England was charging 7%, and for inspiring confidence by accumulating a specie reserve far above the legal requirement of 40%.¹

Since the central Bank of Belgium has already served as a model to two nations which were reorganizing their banking systems, — the Netherlands in 1864 and Japan in 1882, — the Monetary Commission had reason to include this institution in its survey. Accordingly Mr. Charles A. Conant, whose writings on money and banking are well known, was asked to prepare a monograph upon *The National Bank of Belgium* — a task which he has

¹ The editing of this volume on *The Swiss Banking Law* is lamentable. Offences against the English tongue are committed on nearly every page, while the Table of Contents omits all reference to Appendices 4, 5, and 6, and cites as Appendix 2, on the wrong page, the list of references which is printed as Appendix 7.

executed in thoroly competent fashion. After sketching the early history of the bank, Mr. Conant describes in full detail its present organization, operations, and relations to the state. He also provides translations of the laws establishing the bank, extending its charter and defining its duties as fiscal agent of the government, together with the statutes adopted by the shareholders in 1900 for the regulation of its operations. The whole book is interesting and suggestive; but after all the Bank of Belgium remains "a satellite of the Bank of France,"¹ and its experience does not possess great significance for the solution of American problems.

Like the case of Switzerland, the case of Sweden is interesting because of a recent centralization of the issue of bank notes. The Swedes, indeed, did not have to establish a central bank, for their Riksbank is older than the Bank of England, having been founded in 1656 on the model of the Bank of Amsterdam and reorganized in 1668 as the Bank of the Estates of the Realm. But after an unhappy experience in the late 18th and early 19th centuries with privately owned discount houses, the country established a peculiar kind of joint-stock banks of unlimited liability, issuing notes, and known as "enskilda banks." The first of these institutions began business in 1831. Their notes were safeguarded by a system not unlike that of our National Banking System—the deposit of securities under the joint control of a public officer and the banks. For reasons which are not made altogether clear, this organization of bank issues proved unsatisfactory, and after long discussions a law was passed in 1897 which required the enskilda banks to withdraw their circulation by the end of 1903, thus giving the Riksbank a monopoly of issue. By this measure the Swedish banking system was brought into general conformity with that of England, France, and Germany. Professor A. W. Flux, who has prepared the

¹ Paton, *The Bank of France in its relation to National and International Credit*, p. 135.

Commission's volume on Sweden, thinks that this centralization of issue did nothing to aggravate and probably did something to mitigate the severity of the crisis of 1907.

Besides this historical account of *The Swedish Banking System*, Professor Flux provides a supplementary chapter on the banks of Denmark and Norway. He also translates the most important Swedish laws on banking, and reproduces the most significant statistics. His work is well done; but the omission to show just why the old system of issue was given up makes the book less helpful than it might have been in affording lessons for America from experience in Sweden.

Banking in Russia, Austro-Hungary, The Netherlands, and Japan is made up of contributions from eight pens. The articles on the European nations are all translations from the third edition of Conrad's *Handwörterbuch der Staatswissenschaften*. The names of Idelson and Lexis, Zuckerkandl, and Van der Borcht are a guarantee of good work; but the source is a guarantee that these articles are already familiar to students of banking.

Japan is treated on a larger scale. Marquis Katsura, the present, and Baron Sakatani, a former minister of finance, S. Naruse, a leading financier, and Professor O. M. W. Sprague, who spent several years in the University of Tokyo, all bear a hand. American interest centers in the Japanese effort to build a National Banking System upon our model. This experiment was begun in 1872; but was found unsatisfactory, and practically abandoned by transferring the rights of note issue to a central bank. The latter institution — the Bank of Japan — was founded in 1882 on the model of the Bank of Belgium. The regulations concerning circulation, however, were adopted from the German Reichsbank. The chief defects in the working of the National Banking System seem to have been lack of arrangements for transferring idle funds to sections where they were needed, very high rates of interest, and inability to protect the country's stock of specie by effective operations in foreign exchange.

Mr. Conant's *Banking System of Mexico* is probably of more value to economists than to the Monetary Commission. For the system established on the plans of Mr. Limantour, the great Mexican finance minister, is strikingly original; but the business conditions to which it is adapted are so different from those of the United States as to preclude its use as a model.

In 1897 there were only nine banks in Mexico. The largest was the National Bank — an institution which had developed on the basis of a charter granted in 1881 to the Franco-Egyptian Bank, and which acted as fiscal agent of the government. The next in size was the Bank of London and Mexico, also issuing notes, but looking for its business chiefly to the export trade and foreign exchange. The seven remaining banks taken together were smaller than either of these two institutions. Since each bank had its own special charter or concession there was no general system of banking law.

Mr. Limantour, in planning the revolutionary legislation of 1897, definitely rejected the idea of a central bank with monopoly of issue, chiefly because he thought that the economic organization of Mexico was still too simple and too decentralized to need a responsible regulator of the money market and a custodian of the ultimate banking reserve. Instead, his measure looked toward the establishment of one bank of issue in each state, — protected against indiscriminate competition by exemption from taxes to which additional banks in the same state should be subject. But ample scope was allowed the National Bank to retain its position of primacy as the bank of the government and also as a bank of rediscount.

The most original feature of the system, however, was not planned by Limantour — the establishment of the Banco Central in 1899. This institution is now largely owned by the provincial banks of issue and serves them as a clearing house for notes, somewhat as the Suffolk Bank once served the banks of New England. In addition, the Banco Central has been made an organization for mutual

support. When any provincial bank feels itself in danger, it may notify the Banco Central, and the latter summons the other associated banks to contribute their quotas toward a fund equal to half the capital of the bank in straits. This fund is used in redeeming at par the notes of the threatened institution. For this service the bank aided pays 12% on the advances and costs. Thus, in a sense, Mexico has two central banks with distinct functions, operating harmoniously side by side.

The details of this peculiar system and its practical working are clearly set forth by Mr. Conant. Documentary material, including Limantour's report of 1897, laws, and statistics occupy more than half the volume.

Dr. R. M. Breckenridge's *History of Banking in Canada* requires little comment because its predecessor, *The Canadian Banking System*, has been known since it appeared in 1895 as the best book upon the subject. The new volume extends the historical account to the failure of the Sovereign Bank in 1908, and includes in an appendix the legislation and statistics of recent years. While he prints the text of the "Amending legislation of 1908," which permitted the Canadian banks to issue emergency circulation in excess of their capitals but subject to a tax, Dr. Breckenridge does not discuss its bearings upon the present workings and future prospects of the system. Moreover, the illuminating chapter of the earlier book, upon the practical operations and economic effects of the Canadian system, is omitted.

This omission was doubtless due to the fact that Professor Joseph French Johnson had been asked to investigate these subjects for the Commission. His vivacious report, *The Canadian Banking System*, naturally deals largely with facts which Breckenridge taught us in 1895. But it also contains numerous points of fresh interest. In particular, Johnson makes less than Breckenridge formerly did of the equalizing of interest rates in different parts of the country. In Montreal and Toronto, he says, large borrowers can

get money at 5%, but the average merchant and manufacturer must pay 6%. Rates are but little above this level in Winnipeg, "but further west the usual rate is 7% and in some of the remoter districts merchants and farmers alike pay 8%." ¹ In his present book Breckenridge puts the geographical differences of rates at 1½-2%, tho with the admission that frontier towns are charged especially high rates to offset the heavy cost of running branches in regions difficult of access. ² But even the maximum differences suggested by Johnson are much less than the differences between the rates prevailing in different parts of the United States found by Breckenridge in 1898 and by the Comptroller of the Currency in 1899. ³

Further, Johnson lays some stress upon the fact that the equalizing of rates is due quite as much to keeping interest up in the east as to keeping it down in the west. "It is generally known that the eastern branches get heavy deposits and are creditors at the head office, and that the funds they collect are forwarded to the western branches, whose loans greatly exceed deposits. Bankers will admit that this transference of funds takes place, but there is considerable grumbling about it in the old communities of the east . . . one cannot help believing that the branch banking system has really checked the development of business and industry in the maritime Provinces." ⁴

While admitting that Canada has had no banking panic since its present system was perfected in 1890, Johnson shows that during the panic of 1907 the banks did not have currency enough to supply all the needs of their customers. A heavy contraction of loans in Canada occurred in November and December. Still Johnson credits the claim "that during these two months no man who actually deserved and needed a loan was refused it." These terms

¹ Pp. 87-88 and 102, 103.

² *History of Banking in Canada*, p. 161.

³ R. M. Breckenridge, "Discount Rates in the United States," *Political Science Quarterly*, March 1898, vol. xiii, pp. 119-142; Report of the Comptroller of the Currency, 1899.

⁴ *The Canadian Banking System*, pp. 91, 93.

"deserved and needed," however, may be construed very differently by the man who wishes to borrow and the banker who refuses to lend. But after the worst has been said, there can be no doubt that the Canadian banks came through the crisis of 1907 with a far more creditable record than did the American banks.

In passing his final judgment upon the Canadian system, Johnson discredits the critics who hold that the gold reserve is inadequate, but he charges the leading banks with falling sentimental victims to "the rest-fund fad." Had they been willing to carry undivided profits to capital, instead of to surplus, they would have been able to meet even the extraordinary demand for notes in the autumn of 1907 without violating the legal limitation of a bank's issue to the amount of its capital. He also thinks that, while the older banks have no real monopoly, they are "a bit too secretive," and would do well to devise some system of inspection which would give the public more information about their operations, in order to dispel the impression that they are secretly leagued together in a manner prejudicial to the general welfare.

The American material published by the Commission contains four monographs upon banking before the Civil War.

Naturally the Commission is interested in *The First and Second Banks in the United States*. Dr. J. T. Holdsworth of the University of Pittsburg was engaged to prepare an account of the first, Professor Davis R. Dewey of the second.

Our scanty information concerning the business carried on by the first Bank of the United States has long been a source of regret. Dr. Holdsworth made diligent search among the probable sources, hoping to discover records or discussions which would throw light upon the methods and practices followed. But he met with slight success. He found that neither the Girard National Bank of Philadelphia, — in a sense the successor of the Bank of the

United States, — the superintendent of the Girard estate, nor the descendants of the bank's original officers possess any papers of value for his purposes. Treasury officials, also, concurred in the opinion that Knox's unsuccessful search through their old files means that the reports made by the bank to the Treasury were destroyed when the building was burned in 1814 or in 1833. But Dr. Holdsworth has brought some new material to light by reading the newspapers and pamphlets published during the bank's twenty years of life. The minute books and records of the Bank of North America also have given him some valuable data. By utilizing this fresh material in conjunction with the sources formerly known, Dr. Holdsworth has been able to compile an account of the bank which supersedes its slender predecessors. Besides giving a full history of legislation in regard to the bank, and an analysis of its relations to the Treasury, he shows that the institution served the community well in a business way, — not only by meeting the reasonable demands of borrowers, but also by restraining the state banks from over-expansion on the one hand, and on the other hand helping them in times of pressure.

The work of Sumner and Catterall on the second Bank of the United States greatly facilitated the performance of Professor Dewey's task. His account is more concise than Catterall's, more lucid than Sumner's. He naturally lays most stress upon "those operations which might be concerned in the discussion of a central bank at the present time." But he warns readers that both the character of the bank and the conditions of business were such as to make it difficult "to find in the experience of this institution any lessons of importance which may be of special service in the preparation of a plan for a large national central bank at a later period."

In his second contribution to the series, *State Banking before the Civil War*, Professor Dewey again had two predecessors offering guidance. But in this case he has gone distinctly his own way. State banking before the war,

like state finance at present, is an extremely difficult field to cultivate,—it is hard to find materials and harder still to arrange them in significant order. Professor Sumner's *History of Banking in the United States* has brought together a great mass of information, but is so ill-arranged that one can hardly use it except as a secondary source book. The second part of J. J. Knox's volume of the same title likewise contains much material, arranged in the form of separate articles on banking under the laws of each state in turn. No arrangement could be clearer; but none could raise more difficulties for the reader who wishes to find the general lines of development. Now comes Professor Dewey with more information at his command than either Sumner or Knox and his collaborators, and hence with a still more puzzling problem of arrangement on his hands. His solution is to classify according to phases of banking operations. For example, among his most interesting headings are the following: Paying in of capital, State ownership of stock, Scope of business, Methods of evading redemption, Loans and discounts, Specie reserve. Any one interested in learning what the old state banks did with reference to those or 22 other subjects will find Dewey's book exactly to his mind. The scholarly qualities which distinguished the writer's *Financial History of the United States* are again in evidence. But that other student who wants to see the forest, not the trees, must turn away from Dewey hardly less disappointed than he turned away from Sumner and Knox. Happily one hope is left. When Professor Dewey comes to prepare his volume upon banking in the projected *Economic History of the United States* he may yet supplement his admirable collection of materials by a lucid statement of what it all means.

The Safety-Fund Banking System in New York is one of the experiments at regulating bank circulation under state law about which much has been written. But Dr. Robert E. Chaddock of the University of Pennsylvania has made a more thoro presentation of the subject than any of his forerunners. By going back to the New

York assembly documents, the session laws, the contemporary newspapers and pamphlets, he has found much fresh material which amplifies our knowledge if it does not greatly change our verdict upon the system. Chaddock concurs in the opinion of Laughlin and Root that, had the system possessed from the outset the restrictions and safeguards imposed by the amendments of 1837 and later years, no losses would have been incurred by note holders. Even as matters stood, he denies that the system was abandoned because it had failed to provide adequate security. On the contrary, it was hostility toward monopoly and disgust with the legislative corruption attending the granting of bank charters which led to the passing of the free-banking law in 1838. The book is so thoro in other respects that one wishes the writer had followed the practice of other contributors to the series of the Monetary Commission by publishing the text of the safety-fund law in an appendix. Further, the final section on the bearing of the system upon the guarantee of deposits sounds perfunctory and inconclusive.

The publications dealing with banking since the Civil War begin appropriately with an account of *The Origin of the National Banking System* by Mr. Andrew McFarland Davis. Mr. Davis finds the first proposal suggestive of the National Banking System in an article published in the *Analectic Magazine* of Philadelphia in 1815. But of course he lays little stress on any of the early suggestions. His chief problem is, What induced Chase to urge a scheme for reorganizing the banking system upon Congress with such emphasis and pertinacity? He shows that several years before the war Chase was thoroly alive to the evils of the circulation supplied by the state banks. But he thinks that the definite plan which grew into the National Banking System was suggested to Chase in August, 1861, by a letter from O. B. Potter. The banking bill embodying Chase's recommendations Mr. Davis attributes to the coöperation of Silas M. Stilwell, — who was conversant

with the bond-secured note system of New York, — Edward Jordan, — Solicitor of the Treasury, — E. G. Spaulding, — “the father of the greenbacks,” — and Samuel Hooper, — a man of affairs from Massachusetts, who sat with Spaulding on the Committee of Ways and Means. Their work was further modified in the bill which John Sherman fathered in 1863, and the latter in turn was the basis of the revised act of 1864. But Chase, while not the originator of the idea, or the author of the bill, was the prime mover in establishing the new system. And Chase’s prevailing motive, according to Mr. Davis, was less the desire to increase the sale of government bonds than the desire to secure a uniform currency. This conclusion is contrary to received opinion, and it is doubtful whether Mr. Davis’s evidence will convince others as fully as it has convinced himself.

Mr. A. D. Noyes’s *History of the National Bank Currency* is the most disappointing publication of the whole series. His admirable *Forty Years of American Finance* warranted an expectation that Mr. Noyes would treat this important theme with the thoroughness it deserves. Instead he submits a slight essay of 18 pages, which adds nothing to our knowledge of the subject. The Monetary Commission might better have republished Professor Dunbar’s essay on “The Circulation of the National Banks,” or Professor Laughlin’s discussion in the *Report of the Indianapolis Monetary Commission*, with addenda covering the years since 1900.

Limitations of cash payments in times of crisis has been the scandal of American banking since the Civil War, as the condition of the note circulation was before the war. Fortunately the Monetary Commission entrusted the *History of Crises under the National Banking System* to Professor O. M. W. Sprague, a man who has the moral courage to speak plainly on a subject which most financiers and publicists handle with gloves. “The good nature and optimism characteristic of the country,” says Professor Sprague, “extends even to financial matters, regarding which there is a painful absence of thoro, unflinching

criticism in any financial journal." His own work deserves no such reproach.

Sprague's book consists of careful analytic studies of the crises of 1873, 1884, 1890, 1893, and 1907 from the banking standpoint. He believes that each of these crises might have been allayed if the New York banks had possessed a reserve of lending power adequate to meet the needs of borrowers and the demands of depositors for money. Local needs the New York banks could care for, if they were not exposed to the external strain of the withdrawal of the deposits made with them by interior banks. But in accepting these deposits they assume responsibility toward banks and customers of banks throughout the Union, — responsibility which they cannot shuffle off by pleading that the trouble is made by the culpable desire of country banks to strengthen their own reserves in face of a threatened panic.

These bankers' deposits, which produce the breaking strain, have been concentrated since the seventies in the hands of a half-dozen of the New York institutions. When a crisis comes, accordingly, the pressure converges upon these bankers' banks. Ordinarily, they keep their funds invested largely in call loans, which in a serious emergency are even less liquid than other classes of loans, and carry cash reserves not notably greater than the institutions doing a strictly local business. Hence heavy demands for return of their bankers' deposits quickly reduce their strength, and they lie down upon the Clearing House. The latter issues clearing-house loan certificates, and formerly supported the certificates by equalizing cash reserves. In combination, these two measures practically turn the New York banks into one enormous institution. The bankers' banks get the cash of the local banks, at a moderate rate of interest, to meet their obligations to interior institutions, and unless the strain is exceedingly severe, suspension of payments is avoided in New York and elsewhere. But the local banks, many of which are in principle opposed to the payment of interest on bankers' deposits, are not

altogether pleased to see their reserves drained away by competitors in times of stress. Hence in 1884, when the issue of clearing-house loan certificates was authorized, the equalization of reserves was rejected, and since then this co-ordinate feature of the relief measure has never been revived. As a result, the bankers' banks can no longer lay their hands upon the reserves of the local banks. Favorable balances at the clearing house bring in nothing but certificates, and certificates cannot be shipped to the interior banks which are insistently calling for their money. Thus the organization for meeting crises has been less effective in recent cases than in 1873. Meanwhile, the New York money market has become more subject to severe strains from a number of sources, and the New York bankers have become more inclined to accept limitation of cash payments as an unfortunate but inevitable concomitant of crises. "It is impossible," Professor Sprague holds, "to escape the depressing conclusion that the banking situation in 1907 was handled less skilfully and boldly than in 1893, and far less so than in 1873. No new elements of weakness were disclosed, but no real effort was made to overcome difficulties which had been met with partial success at least on former occasions."

Professor E. W. Kemmerer's monograph upon *Seasonal Variations in the Relative Demand for Money and Capital in the United States* presents the results of the most elaborate investigation ever made into this subject. His statistical data include interest rates, statements of clearing-house banks, receipts and shipments of currency, prices of domestic and foreign exchange, money in circulation, deposits of gold bullion at the mints, imports and exports of gold, Treasury holdings of money and federal deposits in the banks, clearings, bond prices, and commercial failures. While the author lays most stress upon the seasonal variations of the New York money market, he also covers the money markets of Chicago, St. Louis, New Orleans, and San Francisco as fully as the material permits. Whenever possible, he carries the tables back from 1908 to 1890; but

in many cases he could secure the necessary information for only a few years. To separate the recurring seasonal changes from the changes peculiar to single years, Kemmerer employs averages for each successive week or month of all the years covered. An ingenious system of index numbers, in which each year is treated as a unit, enables him to minimize the disturbing influence of the factor of growth. Almost all the tables of the text are accompanied by charts. While the results serve chiefly to confirm old opinions, they also bring out many novel details concerning local differences in the seasonal demand for money which are interesting to the economist and important to the banker.

Professor David Kinley's *Independent Treasury of the United States* appeared in 1893. The great changes made since that year in the methods of managing the federal funds gave the Monetary Commission good ground for wishing to have the book brought down to date. The new volume is called *The Independent Treasury of the United States and Its Relations to the Banks of the Country*. The central theme of the new sections is Secretary Shaw's various innovations. While Professor Kinley criticises this official severely for stretching the law and for involving the Treasury in an entangling alliance with the banks, he is not sorry that the legislation legalizing Shaw's practices has abolished the Independent Treasury System piecemeal. As matters stand, "the independence of the Treasury depends entirely upon the will of the Secretary" (p. 325). "The formal repeal of the law now would be largely perfunctory" (p. 207). But positive legislation is needed to perfect some new system of keeping the government's money. Professor Kinley mentions five proposals: (1) to extend the present system by authorizing government officers to pay in checks against the depository banks; (2) to arrange a series of clearing houses to serve as depositories; (3) to set up a central bank for the purpose; (4) to create a federation of the present banks, and (5) to make the Treasury itself a government bank. But he does not undertake to decide which of these plans is best from the fiscal standpoint.

The same writer's *Use of Credit Instruments in Payments in the United States*¹ reports the results of an investigation conducted by the Comptroller's office under Kinley's supervision and modelled on the well-remembered investigation of 1896. Nearly 11,500 banks sent in acceptable returns showing the proportions of specie, currency, and checks in deposits amounting to \$688,000,000 made on March 16, 1909. Kinley analyzes the results minutely, but it is sufficient to note his broad conclusions, that 50-60% of retail trade is transacted by checks, about 95% of wholesale trade, and 80-85% of all business. Even in the paying of wages checks are used to the extent of 30%, if the pay-roll data supplied by the banks for one week may be relied upon.

Since its publication in 1900, Mr. James G. Cannon's *Clearing Houses* has been the standard treatise on the subject. Hence economists will welcome the revised edition under the same title which Mr. Cannon has prepared for the Monetary Commission. Among the most important of the developments since 1900 which Mr. Cannon describes are the establishing of the clearing house for out-of-town checks in Boston, the appointment of clearing-house examiners in Chicago and elsewhere, and the issue of clearing-house loan certificates in 1907. His chapter upon the latter subject is perhaps the least satisfactory in the book. It is an uncritical record, and less complete than Dr. A. P. Andrew's article upon "Substitutes for Cash in the Panic of 1907."²

The volume upon *Suggested Changes in the Administrative Features of the National Banking Laws* contains both the replies to a circular letter sent out by the Commission

¹ Unfortunately, Professor Kinley did his work upon this monograph under severe pressure. Numerous discrepancies appear between the data given for the same facts on different pages. For example: the summaries for national and state banks on p. 133 do not tally with the tables on pp. 125-127, and these wrong figures become the basis of a misstatement in the text at the top of p. 137. Similarly, the summaries for state banks and loan and trust companies, on p. 171, do not tally with the tables on pp. 163 and 166. On p. 200, Professor Kinley says that 70% of the reported pay rolls were in checks, when he means to say in money.

² Quarterly Journal of Economics, August, 1908.

in September, 1908, and the statements made to the Commission by officials of the Treasury and the American Bankers' Association in December of the same year. The topics dealt with are all matters of detail, such as the best way of appointing and paying national-bank examiners, how loans from a bank to its officers should be limited, whether examiners should be given duplicates of statements of condition sent to the Comptroller, how banks can be made to reimburse the Treasury promptly for redemption of their notes so as to keep the 5% redemption fund intact, etc. Both the letters and the oral statements are full of interest to one concerned with the administration of banking. The discussion has already borne fruit in more vigorous efforts on the part of the Comptroller's office to enforce stricter compliance with the law and greater diligence upon the part of directors.

Two compilations of banking laws may also be dismissed with a statement of their scope — tho one of them really does fill a long-felt want. The first volume, *Laws of the United States concerning Money, Banking, and Loans, 1778-1909*, compiled by two Treasury officials, Messrs. Huntington and Mawhinney, is merely the latest of a series of compilations of like scope. In this book the laws are arranged in chronological order under four headings, — finance, banking, coinage, and paper money. Marginal summaries facilitate the finding of matter wanted. For some reason, no table of contents was provided; but this omission has been remedied by the issue of a separate pamphlet. Convenient as this collection is, it does not altogether displace Dunbar's old volume of laws; for the latter contains several important bills which failed to pass Congress or to secure the assent of the President.

The second volume is a *Digest of State Banking Statutes*, prepared by Samuel A. Welldon. The material is arranged (1) by states in alphabetical order, (2) under each state by commercial banks, savings banks, and trust companies, and (3) under each of these groups by twelve sub-heads, relating to the subject matter legislated upon. The inter-

pretation of the statutes by court decisions has not been included, because of the great amount of labor involved in such an undertaking. To secure accuracy the material for each state was sent to the supervisor of banking with a request for suggestions. To facilitate comparison between the laws of different states upon given subjects, the digest is preceded by a tabular summary. This volume promises to become indispensable to all who have to deal with state banking; but in many detailed uses it must be supplemented by reference to court decisions. The fact that Mr. Welldon has done so much makes one wish that he had been able to do more, by including the interpretation as well as the letter of the laws.

Professor George E. Barnett's *State Banks and Trust Companies since the Passage of the National-Bank Act* makes a valuable companion piece to Welldon's *Digest*. It is in substance a thoroly revised edition of the author's monograph of 1902,¹ brought down to date, extended to include trust companies, and supplemented by a reprint of Mr. Thornton Cooke's articles upon "The Insurance of Bank Deposits in the West," which appeared first in the columns of this *Journal*. The systematic survey of state legislation regarding the incorporation of banks, capital, liability of stockholders, restrictions upon loans, reserves, the establishment of branches, supervision, and failures, is followed by an account of the rapid growth in the number of state banks and trust companies. Particularly noteworthy is the discriminating discussion of the relative advantages to a bank of incorporating under state and under national law. One factor, however, of importance in California and perhaps elsewhere, has been overlooked — the unequal burden of the taxes imposed upon state and national banks.

The statistical material concerning banking in the United States is presented in four documents. The volume of *Statistics for the United States, 1867-1909*, compiled by

¹ *State Banking in the United States since the Passage of the National Banking Act*. John Hopkins University Studies in History and Political Science, Series XX, Numbers 2, 3.

Dr. A. Piatt Andrew is a companion piece to the volume of *Statistics for Great Britain, Germany, and France* described above. Of course, most of the tables are derived from, or based upon, the reports of the Comptroller of the Currency; but Dr. Andrew has wisely included statements of the clearing-house banks of New York and Chicago, interest and foreign exchange rates in New York, domestic exchange rates on New York from interior points, etc. In short, the volume offers much the completest statistical survey of American banking to be had. The most serious criticism to which the book is open is that Dr. Andrew did not use the revised figures for the stock of gold in years preceding 1907.¹

Accompanying the statistics is a folio containing 24 *Financial Diagrams*, printed in colors, and graphically illustrating the fluctuations of banking capital, note circulation, interest rates at home and abroad, gold movements, etc.

Finally, the Commission has published a *Special Report from the Banks of the United States*, and a *Supplement* to this report, showing the results of an investigation made by the Comptroller's office as of April 28, 1909. The special feature which differentiates this report from the regular reports obtained five times a year from the national banks, is that an effort was made to get the completest possible returns from state, private, and savings banks and from loan and trust companies. In addition, information was asked upon certain points not ordinarily covered — particularly with reference to the payment of interest upon deposits. It turns out that of nearly ten billions of individual deposits reported by the commercial banks, two billions are savings deposits, and that six and a half billions are non-savings deposits but nevertheless draw

¹ Having had occasion to use Dr. Andrew's annual averages of the New York Clearing-House statements, I have discovered that the figures do not agree with the weekly returns from which they have been computed. Not less than 15 cases of inconsistency have been found in the tables for 1890-1908. Comparison with the tables published in the *Financial Review* indicates that the weekly figures are correct, except for loans in 1897, and that the errors were made in striking the averages.

interest, while not much over one billion of deposits are non-interest bearing.¹

The miscellaneous publications, which conclude the series, cover a wide range.

Two articles by practical bankers, Paul M. Warburg and Lawrence M. Jacobs, are devoted to exploiting the superiority of bills of exchange over promissory notes.² The courts have decided that national banks have no legal power to accept time bills drawn upon them. Hence American bankers have been prevented from adopting the methods current in Europe of providing mercantile credit by accepting for their customers bills which the customers can discount on the strength of the endorsement by the banks. These bank endorsements standardize the commercial paper found in European markets, so that it can be bought and sold like graded commodities by institutions at home or abroad which have no knowledge of the business standing of the original drawers. The promissory notes of this country, on the contrary, possess no such uniformity of credit; for without bank endorsements their value remains dependent upon the credit of the miscellaneous makers. As a result, we have no public discount market, no standard discount rate, and little chance to induce European capital to buy our commercial paper; our importers have to finance their purchases and our exporters their sales through Europe; our local banks cannot secure rediscounts without loss of standing, our idle funds go in the form of deposits with reserve agents and call loans to support stock speculation in Wall Street, etc. These vigorous statements by men familiar with banking practices in Europe and New York bring into the field of discussion a topic which has not received the consideration it merits. But that the benefits resulting from a legalization of acceptances by national banks may be overrated has been shown in these columns by Professor Sprague.³

¹ Supplement to Special Report, p. 82.

² The Discount System in Europe and Bank Acceptances.

³ Quarterly Journal of Economics, May, 1909, vol. xxiii, pp. 402, 403.

The Credit of Nations by Francis W. Hirst, editor of the *Economist*, contains some references to local debts, but is mainly an account of the national debts of England, Germany, France, and the United States. For the European countries Mr. Hirst has relied chiefly upon the *Denkschriftenband zur Begründung des Entwurfs eines Gesetzes betreffend Aenderungen im Finanzwesen*, compiled by the German Imperial Treasury, and published in 1908. For the United States he has been content to use secondary authorities, such as the books of Bolles, White, and Dewey. One of the most interesting facts brought out by Mr. Hirst is that at present British towns can borrow more cheaply than the Empire of Germany. The book is pleasantly written, but reveals no wide research and no profound analysis.

Another editor of an English financial paper, George Paish of the *Statist*, treats *The Trade Balance of the United States*. His method is to run over the various items in the trade balance and set down under each heading an estimate of the net payments or receipts by the United States. The scope of the discussion and the character of the conclusions may both be indicated by giving his results for the fiscal year 1909. On merchandise account the country had a credit balance of \$351,000,000, which was raised to \$411,000,000 by an excess of exports of precious metals over imports. On the other hand, the country had debit balances of \$250,000,000 on interest account, \$170,000,000 on tourist account, \$150,000,000 on account of remittances to friends of immigrants, and \$25,000,000 on freight account. Deducting the total of these debit balances — \$595,000,000 — from the credit balance above, Mr. Paish finds us with a net debit balance of \$184,000,000, which was liquidated by permanent or temporary investments of capital by other countries in the United States.

It will be noticed that several items included by other writers on the subject do not come into this estimate. Two are excluded because Mr. Paish thinks that the net payments and receipts approximately cancel each other, —

money brought in and taken out of the country by arriving and departing immigrants, and the payment and receipt of insurance premiums and policies. But Mr. Paish has little or nothing to say of certain items which Dietzel and others regard as important, — undervaluation of imports to reduce tariff duties, over-valuation of exports to conceal sales abroad below the prices charged to domestic purchasers, profits or losses by foreigners on purchases and sales of American securities, etc. The one thing which all such studies make clear is that estimates of the trade balance are subject to a broad margin of error. But the one thing which Mr. Paish most wants to establish is that the United States should create a central bank, in order that it may obtain the gold it requires with less disturbance to commerce.

The unsigned volume of *Notes on the Postal Savings-bank Systems of the Leading Countries* covers a wider field than the title suggests. For once Sierra Leone, British Guiana, Formosa, and a dozen powers of equal magnitude might take rank among the leading nations. Geographically the work is exhaustive. Not so much can be said for it upon the systematic side. The subjects treated are the history and organization of postal savings-bank systems, the conditions under which funds may be withdrawn, the cost of administration, and the rate of growth as shown by statistics. More than half of the 128 pages are devoted to replies made by American consuls to a *questionnaire* — not the best sort of material.

One of the first acts of the Monetary Commission was to ask the Secretary of the Treasury to detail Mr. J. O. Manson, Chief of the Division of Accounts, Redemption, and Issues, to prepare a report on the *Fiscal Systems of the United States, England, France, and Germany*. Mr. Manson went to Europe and conferred in London, Paris, and Berlin with executive officials charged with the supervision of receipts and expenditures. His report is concise and systematic, tho less detailed with reference to other countries than with reference to England. A discussion of methods of balancing the budget — the weakest point of

our federal finance — did not come within the scope of his inquiry. Perhaps the most important difference which he brings out between the American and European systems is the fuller use of banks by foreign governments in keeping and transferring funds, receiving payments, and making disbursements.

Another side of the Commission's work is represented by the report of *Interviews on the Banking and Currency Systems of England, Scotland, France, Germany, Switzerland, and Italy* and its pendant, *Interviews on the Banking and Currency Systems of Canada*. These volumes contain the information gained from leading foreign bankers by representatives of the Monetary Commission who visited Europe in 1908 and Canada in 1909. Senator Aldrich has intimated that the Commission profited greatly by these personal inquiries. But the reader who is to do likewise must possess patience. There are few arrangements of material so unsystematic as that produced by stenographic reports of conversations. Matters of interest may be brought out; but unless the interviews have been planned in advance with the greatest care, the reader must spend almost as much time as the investigator in getting his information. A digest would have been better than a stenographic report. The volumes are published without even indexes.

One passage may be pointed out, because few will read far enough to find it. In interviewing officials of the Reichsbank, some member of the Commission mentioned the charge made here and in England, that Berlin is not a free market for gold, because in times of stress the Reichsbank suggests to other banks that it is not agreeable to have gold exported. The answer of the Germans was positive indeed. "It never has been the case and never will be the case that any such suggestion has been made by the Reichsbank to anybody. If it happened during the last crisis that some of the banks refused to export gold, that was done for wrongly understood patriotic reasons. The Reichsbank is not in favor of such measures and it is very sure that such a thing will not happen again." ¹

¹ P. 358.

Last comes the *Suggested Plan for Monetary Legislation submitted to the National Monetary Commission by Hon. Nelson W. Aldrich*. While the Chairman does not propose to imitate any of the banking systems described in the preceding publications, he has formulated his suggestions "in the light of the great mass of information which the Commission has gathered." Continued use of this information must be made both by the Commission in elaborating its bill and by all who take serious part in the discussion of that measure. Whatever may be the legislative outcome of the Commission's labors, it has already performed a notable service by gaining fresh and diffusing old knowledge of the subjects with which it deals.

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RECENT PUBLICATIONS ON WOMEN IN INDUSTRY

THE economic status of women in industry has aroused much interest during the past few years. The studies of the subject which have resulted will do much toward aiding in the solution of the many perplexing questions connected with women's wages, technical efficiency, and working conditions, and the special legislation which should be adopted to secure the greatest social benefit. The publications with which the present review deals¹ supplement

¹ *Women in Industry: A Study in American Economic History.* By Edith Abbott. With an introductory note by Sophonisba P. Breckinridge. (New York and London: D. Appleton and Co., 1910, pp. xxii, 409.)

Wage-Earning Women. By Annie Marion MacLean. With an introduction by Grace H. Dodge. The Citizens' Library of Economics, Politics, and Sociology, edited by Richard T. Ely. (New York: The Macmillan Co., 1910, pp. xv, 202. \$1.25 net.)

Women and the Trades. By Elisabeth Beardsley Butler. Russell Sage Foundation Publication. (New York: Charities Publication Committee, 1909, pp. 440.)

Women's Trade Union Movement in Great Britain. By Katherine Graves Busbey. Bulletin of the Bureau of Labor, July, 1909.

The Economic Position of Women. A symposium by eighteen contributors, consisting of studies on the history of women's work in the United States, problems of women in industry, social action, and a bibliography of books in the English language on women in industry. Proceedings of the Academy of Political Science for October, 1910. (New York: Columbia University, pp. 193.)

Report on Condition of Woman and Child Wage-Earners in the United States. In nineteen volumes. Prepared under the direction of Chas. P. Neill, Commissioner of Labor. (Washington, 1910.) — The first three volumes are being distributed. Volumes IV to XII are in type and are issuing from the printing office as rapidly as the work can be handled. The titles of volumes I to XII are as follows: —

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| Volume | I. — Cotton Textile Industry, pp. 1044. |
| " | II. — The Clothing Industry, pp. 878. |
| " | III. — The Glass Industry, pp. 970. |
| " | IV. — The Silk Industry. |
| " | V. — Wage-Earning Women in Stores and Factories. |
| " | VI. — The Beginnings of Child Labor Legislation in Certain States:
A Comparative Study. |
| " | VII. — Conditions under which Children Leave School to go to Work. |
| " | VIII. — Juvenile Delinquency and its Relation to Employment. |
| " | IX. — History of Women in Industry in the United States. |
| " | X. — History of Women in Trade Unions. |
| " | XI. — Employment of Women in Metal Trades. |
| " | XII. — Employment of Women in Laundries. |

The most important of the remaining volumes will treat of the Relation of Occupation and Criminality of Women, Causes of Death among Woman and Child Cotton Mill Operatives, and Employment of Women and Infant Mortality.

each other admirably. Miss Edith Abbott's *Women in Industry* is a study of "the history and statistics of the employment of women in America" from colonial times to the present; Miss Elizabeth B. Butler's *Women and the Trades* presents the findings of the Pittsburgh Survey in regard to the women employed for wages in mercantile and manufacturing establishments of Pittsburgh; Miss Annie M. MacLean's *Wage-Earning Women*, undertaken at the instance of the Young Women's Christian Association, deals with the conditions of women's work in various industries and in various parts of the United States, giving especial attention to welfare and betterment work; the first three volumes of the Bureau of Labor's *Report on Condition of Woman and Child Wage-Earners in the United States* are exhaustive inquiries into the cotton textile, the men's ready-made clothing and the glass industries; Katherine G. Busbey's study in the Bulletin of the Bureau of Labor for July, 1909, deals with the history and present status of *The Women's Trade Union Movement in Great Britain*; and the Proceedings of the Academy of Political Science of New York City for October, 1910, contain a symposium on the numerous topics connected with *The Economic Position of Women*.

Women in Industry is a careful and valuable study in economic history. Miss Abbott shows conclusively "that women have been from the beginning of our history an important factor in American industry" (p. 317). Both the facts of industrial history and the available statistics go to show that there has been no "woman's invasion." The result of Miss Abbott's statistical inquiry "was to show that, while the present tendency was toward an increase in gainful employment among women, that increase had been only normal, considering the rate of increase in the population, in the group of industrial occupations designated in the census as 'manufacturing and mechanical pursuits,' while there had been a disproportionately large increase only in the occupational group 'trade and transportation'" (p. xiii).

Miss Abbott considers separately the history of the five industries which employ the largest numbers of women, *i. e.* textiles, clothing, tobacco and cigars, boots and shoes, and printing and publishing.

It is a more or less common impression that working conditions are much worse now than they were seventy-five or a hundred years ago. For instance, Miss MacLean says¹ that "the semi-idyllic conditions of the early New England cotton mill have given way to a system brutalized by greed and the exigencies of modern industry." Miss Abbott presents abundant data, however, to support her conclusion that "conditions of work in the cotton mills of the first half of the nineteenth century were, in fact, far from being as superior as the early body of operatives" (p. 125). The mills were very unsanitary and badly constructed, the working day was notoriously long, being from 12 to 14 hours, and the wages were low. In Fall River the working day began at 5 A.M. and did not end until 7.30 P.M. Of 284 woman employees in the Waltham Mills in 1821 only one received over \$4 a week, while 218 received under \$3 (p. 278). The reason that the factories of the present impress the visitor less favorably than those of fifty or seventy years ago is because of "substitution of immigrant operatives for the educated New England women who first filled the mills" (p. 146). Miss Abbott finds that in the manufacture of cotton goods, which is the most important woman's industry, "the women are being slowly displaced by men" (p. 104) and that "cotton manufacture now employs a relatively smaller proportion of the total number of women in the country than formerly" (p. 105).

The boot and shoe industry, unlike the cotton industry, has not always employed women. In colonial times it was purely a man's employment, but during the first half of the nineteenth century women became an important factor, and since the introduction of modern machinery woman's work has become increasingly important. Immigrant labor

¹ *Wage-Earning Women*, p. 11.

has not replaced native labor in this industry as it has in cotton textiles. The reasons given by Miss Abbott are that the work is more skilled, that the wages are higher, and that America has been a pioneer and has therefore been compelled to educate its own labor force. In the cigar-making industry, the introduction of machinery and mechanical devices has led to such a great increase in the number of women employed as "to indicate its tendency to develop into a 'women's industry'" (p. 186). An unusually large percentage of foreign-born and married women are employed. In the clothing trades Miss Abbott finds an opposite tendency in the employment of women. "The tendency of the last quarter century in the industry has been toward an increase in the proportion of men and a corresponding decrease in the proportion of women employed" (p. 231). The invasion of Russian Jews into the industry is given as the chief reason for this decrease. "The clothing industry has been more affected than any other trade in this country by successive waves of immigration" (p. 230).

Altho the work of the printing trades has been characterized as being "peculiarly women's work" and altho there were 37,000 women employed in the printing trades in 1905, "yet printing has never been a trade which women have made their own" (p. 250). This has probably been due to the policy of the printers' union in combating the entrance of women into the trade. In 1872 the union adopted the policy of "admitting women to full membership in local unions and demanding for their labor the same price paid to men" (p. 254). Since women "are not as efficient as men and at present there is no direct path of efficiency open to them" (p. 260), this policy means that men printers are employed in preference to women at the union scale. The union policy was adopted "to protect the wage scale, not to encourage women to enter the trade" (p. 260).

As to the relation between wages received by men and by women Miss Abbott points out "that the median rates

given in the Dewey report show that in 'all industries' the median rate for women is fifty-three per cent of the rate for men; that in the tables which have been given for the different industries, the women's median wage is uniformly lower than the men's, varying, in fact, from one-third in the printing trade to approximately three-fourths (seventy per cent) in the cotton industry" (p. 312). However, as Miss Abbott truly says, the wages of men and of women are not really comparable. Her study of the cotton, boots and shoes, men's clothing, cigar-making, and printing industries shows that women are doing less skilled work than men. Miss Abbott subscribes to Mr. Webb's theory "that the woman is poorly paid, in part at least, because she is inefficient and is doing work which is less skilled than that done by men." This theory receives striking confirmation by the Bureau of Labor *Report*, to be considered later.

Women and the Trades is a study of the working conditions in the industries and trades of Pittsburgh which employ women. Each of 448 shops and factories was visited and data were secured from employers, employees, and other persons familiar with the trade. The conditions in each trade and industry are discussed separately. Miss Butler gives an interesting picture of the conditions of employment of women in this great non-union industrial center.

The wage statistics collected are illuminating. A summary of the *rates* of wages received by 22,185 women in twenty-seven different trades (p. 338) shows that 62 per cent receive less than \$7 per week, 21 per cent from \$7 to \$7.99, and 17 per cent receive \$8 or over. Of the 7540 women in mercantile employment, 73 per cent receive less than \$7 per week. Miss Butler says that not one of the working women or others interviewed "was willing to consider \$6 a living wage. They agreed that the minimum below which a working girl cannot live decently and be self-supporting in Pittsburgh is \$7 a week" (p. 346). When we consider that the figures quoted are rates and not earnings, that many of the occupations are seasonal, and that

nearly all have their dull seasons lasting several weeks, we can appreciate something of the economic pressure felt by these working girls. The stock reason of the employer for the payment of such low wages is that the girls depend upon their families for support. Miss Butler quotes a box manufacturer who says, "We try to employ girls who are members of families for we don't pay the girls a living wage in this trade" (p. 346). Again, she found that "it is assumed that shop girls are only partly self-supporting and need only work for pin-money" (p. 346). No direct evidence was taken in Pittsburgh as to the percentage of woman workers who depend upon families for part of their support but the indirect evidence indicates that it is almost negligible. The direct evidence obtained by Miss MacLean (quoted later), and the data given on family conditions and income in the *Bureau of Labor Report*, substantiate this conclusion. The social disaster to which the pin-money theory often leads is illustrated by the following case, one of several cited by Miss Butler: "Emma — was employed in a waist department at \$5 a week. She had no friends in the city, but sent money home to her people and paid board. At the end of six months she became an occasional prostitute; after a year was discharged by the firm" (p. 306).

Payment by the piece is the rule in Pittsburgh factories. Numerous instances are given where the piece rate was cut after the girls had reached their maximum speed and had secured earnings approximating \$1.50 a day (pp. 218 and 263). Much evidence of over-speeding is given. A manager of a large stogy factory holds that in his industry "No girl can keep up her pace more than six years" (p. 96). Miss Butler concludes that the stogy industry "is taking young, undeveloped girls, lifting their speed to the highest pitch and wearing them out" (p. 96). In telephone work "the life of an operator" was given by the managers to be from eighteen to twenty months in one company and fifteen months in the other (p. 291). It would seem that under the present industrial system the union is the only effective means of raising wages and eliminating over-speeding.

A ten-hour working day is the rule. Over-time and night work are common in many industries, such as laundry work, canning, and confectionery. The conditions surrounding workers in laundries, bakeries, the garment trades, lacquering of metal, etc., were found to be unhygienic and unsanitary in many instances. The favorable conditions in certain factories showed that work need not be carried on in a manner unhealthful to the employees. In many factories the machinery is not properly guarded and the inevitable accidents happen (p. 234). It is evident that Pittsburgh needs more stringent government supervision of factories and employer's liability laws.

Miss Butler finds that women working in the same trades as men earn about half the wages. However, her analysis of the work of the two sexes leads her to agree with Miss Abbott "that women and men tend to separate into non-competing groups. They rarely work together on the same wage level, or at identical work."

The data upon which *Wage-Earning Women* is based were collected by forty volunteer investigators under the direction of Miss MacLean. "The investigation dealt with women in widely scattered regions from New York City to the Pacific coast, including typical mill towns in New England and New Jersey, the mining regions of Pennsylvania, the great industries of Chicago, certain small cities of Michigan, and the great Middle West with developing manufacturing interests, and the seasonal work of picking hops in Oregon, and picking, drying, packing, and canning fruit in California" (p. 3). The study is valuable, therefore, chiefly for its snap-shot pictures of women at work and for the incidental information which was not secured by the Labor Bureau investigation.

The data gathered in New York City and New Jersey indicate that the typical working girl is unmarried, is about 20 years old, earns at a rate not over \$7 a week, and lives at home but pays board or contributes to the family support. A summary of the results for New York City and New Jersey follows: —

NEW YORK CITY

1476 working women were canvassed.

45% earn less than \$7 a week

91% are single

79% are under 25 years of age

88% live at home

95% of those living at home contribute to family support.

NEW JERSEY

824 workers in the silk mills and potteries of four cities were canvassed.

47% earned less than \$7 a week

78% are under 25 years of age

87% live at home

92% of those living at home contribute to family support

Only 22 paid nothing for board at home.

It will be noticed that 45% in New York and 47% in New Jersey were reported to "earn less than \$7 a week." These "earnings" are, apparently, "rates of pay." The schedules used by the canvassers asked for the "average wage." Such a question leads to inexact answers and is contrary to good statistical practice.

In the fruit industries of California it was said to be common for mothers with young babies to continue working in order to take advantage of the busy season. "A seeder was found, who had a baby just three days old. Now and then the young mother, hot and excited, stopped long enough to nurse the baby when it was brought to her" (p. 126). The injurious social effects of work under such conditions need only be stated in order to be recognized.

The first three volumes issued by the Bureau of Labor on *Woman and Child Wage-Earners in the United States* set a very high standard of excellence for the series, which is to be completed in nineteen volumes. The investigation

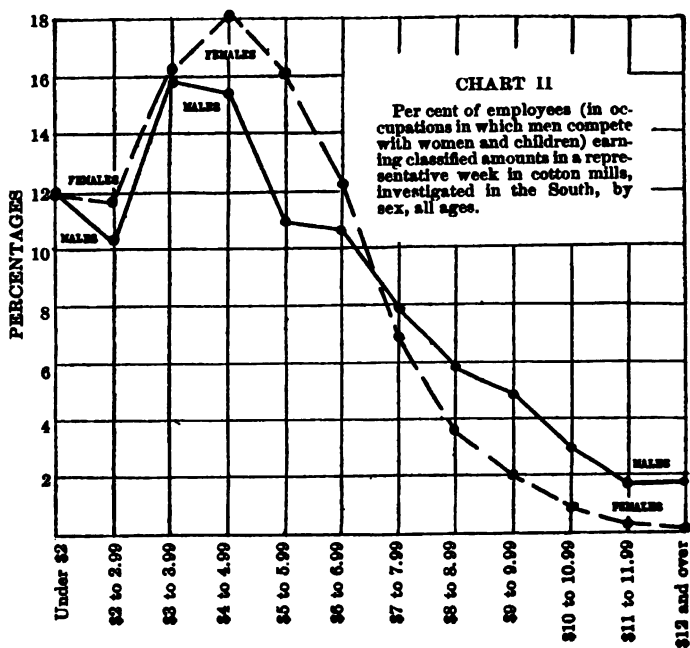
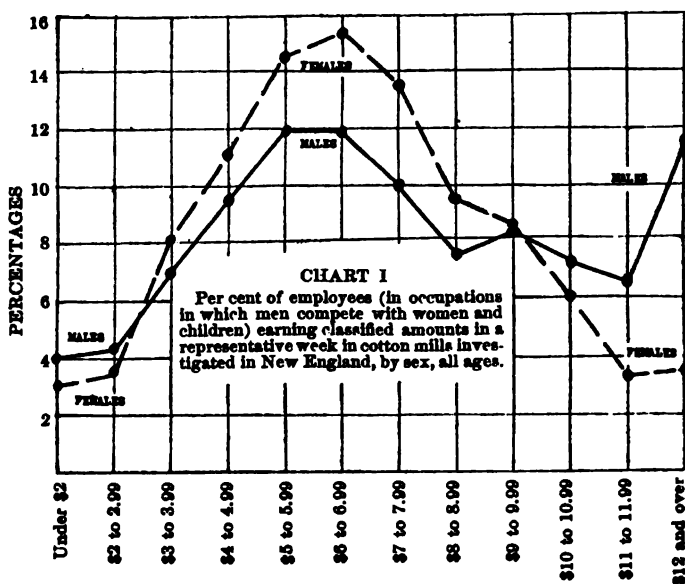
of the cotton industry covered 32% of the total number of operatives of four states in New England and six states in the South. These states had, in 1908, 85.8 per cent of the spindles of the entire country. The investigation of the men's ready-made clothing industry covered 29.7% of the employees in the five cities leading in the manufacture, namely, New York, Chicago, Baltimore, Philadelphia, and Rochester. These cities manufacture 68.3% of the total value of men's ready-made clothing made in the United States. In the glass industry three-fourths of the factories in operation, employing 70% of all women and child glass workers in the United States, were included in the study.

The investigations were carried on by special agents who visited the various establishments and interviewed the employees. The earnings and hours of work of each employer were obtained from the pay rolls. Information was also obtained concerning the age, conjugal condition, nativity, and race of a large number of workers. Care was taken to verify the ages of the younger children employed. Detailed information was obtained in regard to the living conditions of over two thousand families in each industry. General tables give the number and conjugal condition of employees by years of age, or age group, classified weekly earnings in dollar groups by age and sex, family income with source of same, literacy and school attendance, and the economic condition of families having children or woman members at work. An intimate picture is drawn of each industry. Data are presented of a kind hitherto not available, such as that on the relation between age and wage. The investigations seem to have been as careful as they were extensive, and tho the tables of the various volumes are not quite comparable, the text is well written and arranged. In the following I will limit myself to consideration of some of the important results bearing on the conditions of woman workers.

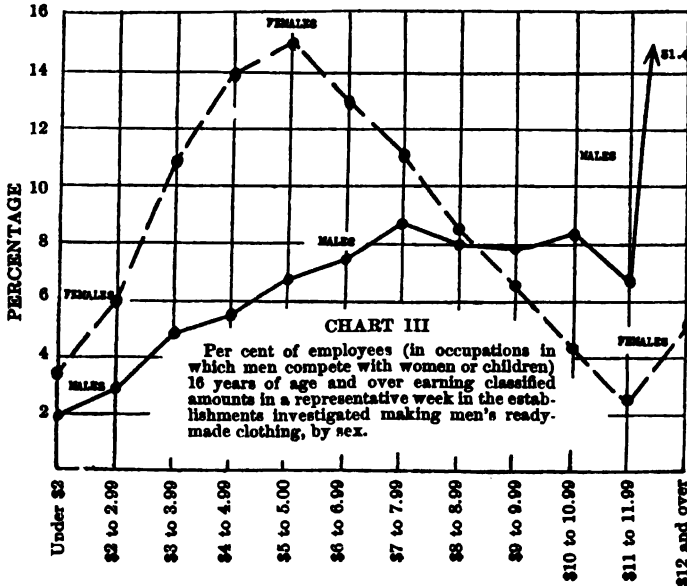
In the cotton textile industry the report notes that there has been a displacement of women by men and that "the period of greatest increase in the total number of employees

in the cotton industry marked the greatest fall in the proportion of women. . . . These facts suggest that the industry has developed so rapidly, particularly between 1890 and 1900, that women could not be obtained in sufficient number to fill the demand for new employees . . . " (pp. 32, 33). The history of the industry in the South supports this theory. In the men's ready-made clothing industry the unsatisfactory statistics available indicate that women have been displaced by men, especially during the period of the development of the shop system, extreme division of labor, and the introduction of power machines. In hand work "only the inferior and more poorly paid work was left to women" (p. 495). In the glass industry there was a marked increase in the number of women employed during the period 1880-1900, but the census of 1905 showed a slight decrease. At present women over 16 constitute but 6% of the total number of employees in the industry. The differences between the wages paid male and female workers in the cotton and ready-made clothing industries are evident from Charts I, II, and III.¹ Only those occupations are taken in which men and women compete. In each case wage groups are marked off on the horizontal and the percentages of males or females earning the wages indicated appear as ordinates. In each graph the sum of the ordinates equals 100%. The average number of hours worked by the employees in each of the lowest two or three groups was considerably below the normal. The median wage for females in New England cotton mills is in the group \$6 to \$6.99, for males in the group \$7 to \$7.99. In southern cotton mills the median for both males and females comes in the group \$4 to \$4.99. Considering only operatives 16 years and over in New England mills the median weekly earnings for 6492 males is computed to be \$7.58, and the median weekly earnings for 13,744 females is computed to be \$6.78. Women's earnings are, therefore, nearly 90% of men's earnings in competing occupations in cotton mills. Including only those 21 years and over the medians are

¹ The charts have been prepared by the reviewer; they are not in the *Report*.

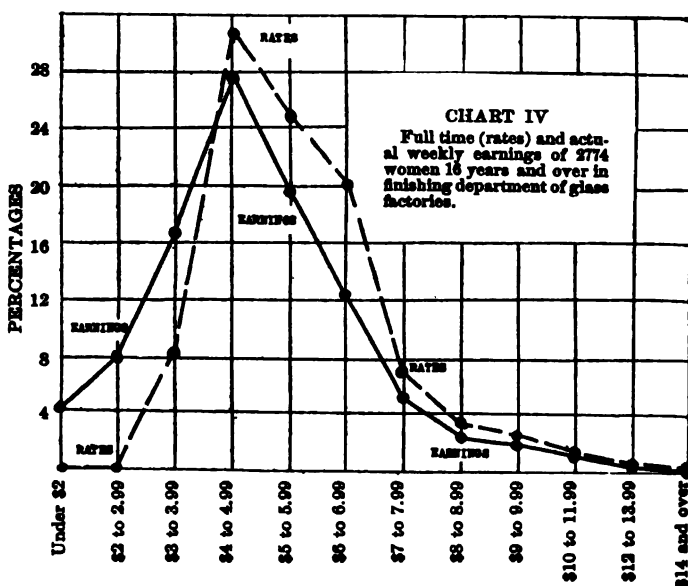


in the following groups: \$8 to \$8.99 for men and \$7 to \$7.99 for women in New England, and \$6 to \$6.99 for men and \$5 to \$5.99 for women in the South.



The earnings of men and of women in the clothing industry are not quite comparable because "certain occupations which are left entirely to women in some cities are almost entirely monopolized by men in other cities" (p. 123). Chart III shows the strikingly different wage curves for the two sexes. Median weekly earnings of men are from \$3 to \$5 more (depending on the city) than they are for women. The reason given for this great difference is that "most of the women have left the shop before the age when experience and skill permit the highest earnings" (p. 147). "Taking conditions most favorable to the labor force—steady work and a year of high industrial activity—the maximum yearly earnings for women 16 years of age and over in Chicago are found to average a little over \$8 per week and in Philadelphia about \$6 per week" (p. 172).

Chart IV gives the percentages of women receiving the indicated actual earnings and rates, in the finishing department of glass factories. There are no comparable figures for males, since few men compete with women in this department. The median of the actual earnings is in the group \$4 to \$4.99; the median of the rates is in the group \$5 to \$5.99. Eighty-four per cent of the women receive rates less than \$7 per week.



Examination of the wage data classified according to age of the employees shows that there are striking age differences between the two sexes. In the cotton industry female employees 16 to 20 years of age "constituted 30.8 per cent of all females in New England and 34.8 per cent of all in the South" (p. 44). The corresponding figures for males are 26.4 per cent in New England and 21.7 per cent in the South. Statistics furnished by the Massachusetts Bureau show that 50.3 per cent of the female cotton operatives in the state are in the age group, "16 and less than 25 years."

Comparative figures for males are not given. In the ready-made clothing industry out of 11,685 female workers 52.1% were under 21 years, while of 5812 male workers only 23.7% were under 21 years of age (p. 36). This great difference in ages, with its consequent difference in experience and skill, goes far to explain the difference in wages received by the two sexes. In New England cotton mills the percentages of males and of females according to age earning less than \$8 per week are about the same until we reach the group "21 and over" when they are 43.2 and 60.8, respectively. In the South the percentages of males and of females, by age, earning less than \$6 per week differ very little from each other until we reach the group "18 to 20 years" when they are 55.0 and 72.5, respectively. In the ready-made clothing industry the great difference in earnings, as shown by Chart III, is likewise to be explained by the fact that "most of the women have left the shop before the age when experience and skill permit the highest earnings" (p. 147).

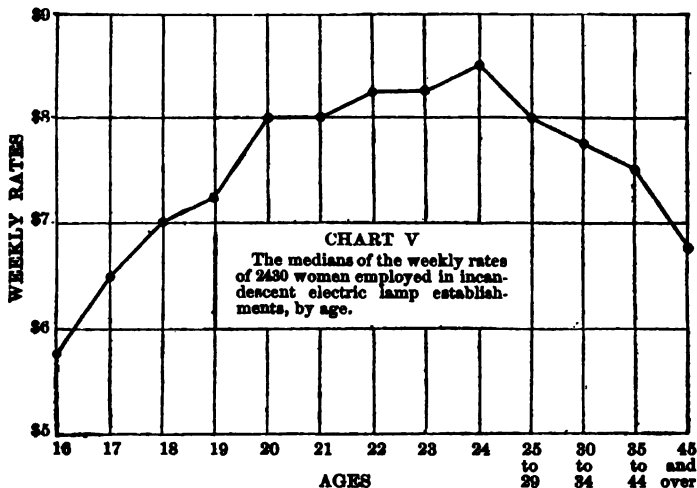


Chart V, again, shows the variation of wages, classified by age, of 2430 women employed in incandescent electric

light establishments. Ages are measured on the horizontal and median wages of the age groups on the vertical. There is a rapid rise from age 16 to age 20, a gradual rise from age 20 to age 24, and, finally, a fall from age 24 to the group, 45 and over, when the 17 year-old wage level is nearly reached. In the finishing departments of glass establishments 74.2% of the women employed are from 16 to 24 years of age and in incandescent electric light establishments 83% of women employees are in this age group. This whole analysis goes to show, then, that a very large part of the difference between the wages of men and women is due to the inefficiency and lack of skill of women, which in turn are due to the inexperience of younger age and shorter working life.

A further effect of woman's short stay in industry is that she tends to monopolize the unskilled trades. The three volumes of the Labor Bureau *Report* give much evidence to support the theory that men and women tend to form non-competing groups. This, of course, tends to put the two sexes into separate labor markets, and to cause their wages to be fixed by the different conditions surrounding the two markets. Woman's lower standard of life, lack of organization, and more limited field of employment, are some of the conditions which make her labor market an unfavorable one for her. These elements are, in my opinion, of less influence in most fields of employment in causing woman's low wages than her lack of technical skill.

There is not space here to summarize the working conditions that call for factory legislation. I may call attention, however, to one striking fact observed that calls both for state regulation and education of the employees. In 38 of the 46 cotton mills visited in New England and in 145 of the 152 mills visited in the South, in an industry where tuberculosis is especially common, it was reported to be customary to spit on the floor. In only one state, Massachusetts, is there a law against spitting on the floors of a manufacturing establishment and the law in this state is not enforced.

Miss Busbey shows clearly in *The Women's Trade Union*

Movement in Great Britain that woman's weakness in unions is the result of her short working life, inefficiency, submissiveness, and low wages. "It is in the low wages of women workers that the chief difficulty of effective organization lies. The trade union leaders, therefore, have to cope with the apparently paradoxical situation of women being frequently poorly paid because they are not organized, and protective organization rendered impossible because they are too poorly paid to afford even the small sum attendant upon combination" (p. 6). In 1874 the first successful attempt to organize women in Great Britain resulted in the "Women's Trade Union League." The League has not been militant and has refused to join with men in making demands upon employers. Other women's unions have been formed from time to time until the membership is now over 200,000. However, the apathy of women, the inclination to underestimate their own value, and the fact that "they let the men run the unions" (p. 10) have been influences that curtail the value of women's organizations. The chief results secured by the organizations of Great Britain are the education of women concerning their rights under the British Workman's Compensation Act, the agitation for labor legislation, the crusade against the living-in and truck systems, and the protection secured against unjust fines by employers. At present the women's trade union leaders are endeavoring "to accomplish the extension of the board of arbitration prerogative to an authoritative institution for legal decision in wage disputes and the establishment by law of a minimum wage in the different trades" (p. 44).

Miss Busbey's study leads her to conclude that "the women's trade union movement in Great Britain is in an immature stage of development or it may be nearly transitional, but its development has not been arrested" (p. 50). "Women's trade unions, then, would not seem to have demonstrated a high efficiency in a widespread elevation of wages, but as a factor in maintaining a once-established standard of wage the women's trade union movement gives undeniable evidence" (p. 49).

The policy of women trade unionists in Great Britain has been, and is, to secure better labor conditions through protective legislation rather than by means of direct demand on employers enforced by strikes.

The various articles in the symposium on *The Economic Position of Women* cover the historical development of women's work in the United States, various problems of women in industry, such as the training and education of women, the industrial work of married women, the economics of "equal pay for equal work" in the schools of New York City, and the betterment of the conditions of employment through social action. Mr. H. R. Mussey in his introduction holds the theory that "such a large proportion of [working women] are mere 'pin-money girls' that there is no minimum standard of wages, such as is furnished for men by the necessary cost of maintaining a family" and that "the wages of all women, self-dependent or not, tend to be fixed on the assumption that they will live parasitically on their relatives." The evidence already quoted from the books which are the subject of this review warrants Miss MacLean's characterization of this theory as "vicious and unsupported."¹ As to the reason why women receive so small a wage Mr. Mussey is not even consistent with himself. He says, "uninterested, untrained, unskilled, they are on a low level of efficiency, and they have little motive for climbing to a higher level. Small wonder that they crowd the unskilled labor market, and that their work commands a mere pittance" (p. 5). However, on page 7, he concludes that "women are paid less than men primarily because they will take less, not because their work is worth less or because they need less; and public opinion acquiesces without protest."

Miss Sumner, in her article on the *Historical Development of Women's Work*, holds that "the greatest economic success of women wage earners in manufacturing industries has been attained in occupations in which they have competed directly with men" (p. 16). She mentions woman printers

¹ *Wage-Earning Women*, p. 177.

and cigar-makers as illustrations. The available data show that neither of these illustrations is well chosen. Miss Butler says, "Analysis shows that in only a few cases are women permanent active competitors with men for identical work, within the limits of their working life. I found this true in Pittsburgh among press feeders and compositors in printing offices. . . ." ¹ Miss Abbott found that altho women are received into printers' unions on the same terms as men, for a woman "to join the union and demand the same rate of wages is to invite discharge." ¹ The Dewey Report gives the median wage for men printers in 1900 as \$16 and that for women as \$5 weekly. Cigar-making is the other industry cited by Miss Sumner as one in which women derive an advantage by competing directly with men. The wage data of the Dewey Report do not show this advantage, as women receive only 40% of the wages paid to men in the same occupations of packing and rolling cigars. Miss Sumner's generalization, therefore, is not supported by the facts.

Three writers among the contributors to the symposium call attention to the inherent character of woman's industrial handicap. Miss Emily Greene Balch holds that "we cannot make women efficient in any complete sense under circumstances which so militate against their efficiency . . ." (p. 71). The "circumstances" referred to are the short industrial life of women necessitated by marriage and child-bearing. Miss Florence Kelly is impressed by the social evils which result from the industrial employment of married women. "Whether the wage-earning mother leaves home, or brings her work into the home, her children pay the penalty" (p. 9). Finally, Miss Alice Henry shows the difficulty of making women's unions effective because, "Seven years is the average duration of women's wage-earning life. The average woman unionist is a mere girl."

John Martin, of the New York Board of Education, has an interesting paper on *The Economics of "Equal Pay for*

¹ Women and the Trades, p. 344.

² Women in Industry, p. 261.

Equal Work " in the Schools of New York City. He shows that the motto of the Interborough Association of Women Teachers, "Equal pay for equal work," is a doctrinaire slogan to which the women teachers themselves do not adhere. For instance, the salary schedule advocated by the Interborough Association provides that "any position between the kindergarten and the seventh grade may be filled by teachers with salaries varying from \$720 to \$1515" (p. 103). Mr. Martin holds that "Salaries are settled by the pragmatic method" and that the chief of the many elements to be taken into account are: "1. A living wage. 2. Years of experience or age. 3. Length and quality of preparation for the work. 4. Responsibility of the duty performed. 5. Total demand upon the taxpayer which the schedules entail and willingness of the taxpayers to meet the demand. 6. Adjustment over a long period of the supply of teachers to the demand" (p. 99). Mr. Martin shows clearly that if men teachers are to be retained in the schools their salaries must be higher than it is possible to pay women. He says, "For reasons over which the educational authorities have no control men teachers of as high a personal quality as women teachers cannot, over a long period, be secured and held for the same pay" (p. 101). The argument of Mr. Martin that salaries cannot be determined by reference to an abstract doctrine like "Equal pay for equal work" is convincing.

In conclusion, Miss Abbott gives us an authoritative historical study in *Women in Industry*; Miss Butler and Miss MacLean give us excellent pictures of the present conditions surrounding working women; and the Labor Bureau Report gives the most complete data available on the important questions of women's wages and the general conditions of work in important industries.

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NOTES AND MEMORANDA

THE TRUSTWORTHINESS OF THE BUREAU OF LABOR'S INDEX NUMBER OF WAGES

DOUBTS concerning the trustworthiness of the index number of wages compiled by the federal Bureau of Labor were aroused in 1903 by the publication of Professor Davis R. Dewey's census report upon *Employees and Wages*. Professor Dewey, indeed, did not cast his statistical data into summaries directly comparable with the Bureau's results; but his detailed tables and his comments upon conditions in industry after industry indicated that net reductions in wages between the census years 1890 and 1900 had been quite as numerous as net increases. According to the Bureau of Labor, on the contrary, wages stood decidedly higher in 1900 than in 1890. The index number, based on average rates of pay per hour in 1890-99, was 105.5 in the later and 100.3 in the earlier year. Thus there seemed to be a discrepancy between the results of the two investigations.

This impression was made more definite in 1907 by Professor Henry L. Moore's study of "The Variability of Wages."¹ Basing his work upon Dewey's data, Moore computed the average rate of wages in 30 selected industries in the years 1890 and 1900, and found that relative wages had declined from 100.0 to 99.6. Like Dewey, Moore said nothing about the discrepancy between his own figures and those of the Bureau of Labor; but he owned himself surprised at getting results "so utterly at variance with what is commonly thought as to the movement of wages."²

¹ Political Science Quarterly, March, 1907, pp. 61-73.

² Ibid., p. 68. To make sure of the arithmetical accuracy of his work, Professor Moore repeated the computations by a slightly different method, and arrived again at the same ratios of 100.0 in 1890 and 99.6 in 1900.

Others, less cautious than Dewey and Moore, have discredited the Bureau's results because of this discrepancy. The extreme care with which Dewey's material was collected and the impartiality with which it was analyzed favored the opinion that in case of disagreement the Bureau must be wrong. Insinuations were not wanting that the Bureau had selected its data with the set purpose of making out an advance in wages.¹

Desiring to use the Bureau's index number of wages in a study of business cycles, I recently had occasion to test the trustworthiness of the figures. Previous experience in dealing with the prices of labor and of commodities indicated that different collections of data, made in good faith, representative in scope, and analyzed by similar methods, yield substantially similar results.² The problem was to determine whether the discrepancy between the results obtained from the Bureau's collection of wage statistics and from Dewey's collection was due to dissimilarity in the methods of analysis, dissimilarity in scope, or dissimilarity in the original data.

Examination showed that Moore's table differed from the Bureau's table in several respects. Moore took wages per week, the Bureau wages per hour; Moore excluded females, the Bureau included them; Moore covered 30 industries, the Bureau 56; Moore weighted his figures by actual numbers employed, the Bureau did not weight its figures for different occupations in striking averages for each industry, but did weight its figures for different industries in striking grand averages; finally, Moore computed averages in one way, the Bureau in another. Moore began by tabulating the number of men receiving \$2-3 a week, \$3-4, \$4-5, and so on. Then he multiplied the mean wage in each of these groups (\$2.50, \$3.50, \$4.50) by the

¹ See, for example, Ernest Howard, "Inflation and Prices," *Political Science Quarterly*, March, 1907, p. 81.

² Compare Gold, Prices, and Wages under the Greenback Standard, pp. 203-218, and "The Dun-Gibson Index Number," *Quarterly Journal of Economics*, November, 1910, pp. 161-172.

corresponding number of employees. To find the average actual wages, he divided the sums of these products by the total number of men represented, and then turned the average actual wages into percentages. The Bureau, on the other hand, turned its actual wages per hour into percentages at the outset, and then made arithmetic means from these percentages by the curious combination of simple and weighted averaging which has been stated.

All these differences in scope and method proved capable of substantial elimination in fresh computations based upon the Bureau's data and summarized in the accompanying table. The actual wages per hour in 1890 and 1900 were multiplied by the number of working hours per week in each year to get wages per week. The industries not covered by Moore and all series for females were rejected.¹ The figures were weighted by the numbers reported as employed in each occupation, the data were distributed in the groups used by Moore, and average wages were computed after his fashion. The result was an average weekly wage of \$13.01 in 1890, and \$13.05 in 1900. These actual wages correspond to relative wages of 100.0 in 1890, and 100.3 in 1900, — figures which are almost the same as Moore's relative wages of 100.0 and 99.6.²

The practical identity of these results confirms confidence in the integrity and in the representative character of both

¹ The industries included as corresponding to Moore's were Agricultural implements, Bakeries, Boots and shoes, Boots and shoes — rubber, Candy, Carpets, Carriages and wagons, Cars — steam railroad, Clothing — factory product, Cotton goods, Dyeing, Flour, Foundry and machine shops, Furniture, Glass, Hosiery and knit goods, Iron and steel — all branches, Leather, Liquors — malt, Lumber, Musical instruments — pianos, Paper and wood pulp, Planing mills, Pottery, Printing — book and job, Shipbuilding, Slaughtering, Tobacco — cigars, Tobacco — plug, Woolen and worsted goods.

² Moore's actual wages were \$11.57 in 1890 and \$11.52 in 1900; but the difference between these results and those obtained from the Bureau's data is no cause for misgiving. For the Bureau of Labor did not collect its statistics with the purpose of determining the average actual rates of pay prevailing in different years, but with the purpose of determining the average rates of change in wages from one year to the next. Had it aimed at determining actual rates, the Bureau would have made a much more elaborate examination of the number of persons employed at the different rates. That it did not accomplish an object at which it did not aim, does not impair confidence in the results which it did seek to establish.

THE DISTRIBUTION OF WAGES IN THIRTY MANUFACTURING INDUSTRIES, ACCORDING TO THE DATA OF THE BUREAU OF LABOR

Rates of wages per week	1890		1900	
	No. of wage-earners	Percentage of whole number	No. of wage-earners	Percentage of whole number
\$2— 2.99	81	.12	..	..
3— 3.99	26	.04	215	.25
4— 4.99	..	..	20	.02
5— 5.99	274	.41	239	.28
6— 6.99	706	1.07	711	.83
7— 7.99	2,482	3.75	3,041	3.54
8— 8.99	7,080	10.69	7,882	9.18
9— 9.99	2,503	3.78	10,113	11.78
10—10.99	8,297	12.53	5,249	6.11
11—11.99	797	1.20	2,406	2.80
12—12.99	9,136	13.80	10,689	12.45
13—13.99	5,733	8.66	4,325	5.04
14—14.99	8,546	12.91	14,948	17.41
15—15.99	14,465	21.84	15,788	18.39
16—16.99	3,638	5.49	5,636	6.56
17—17.99	301	.45	1,756	2.05
18—18.99	252	.38	427	.50
19—19.99	216	.33	360	.42
20—20.99	60	.09	503	.59
21—21.99	491	.74	53	.06
22—22.99	105	.16	116	.14
23—23.99	56	.08	99	.12
24—24.99	201	.30	79	.09
25—25.99	39	.06	140	.16
26—26.99	480	.73	21	.02
27—27.99	33	.05	336	.39
28—28.99	68	.10	..	..
29—29.99	6	.01	..	..
30—30.99	38	.06	498	.58
31—31.99	15	.02	23	.03
32—32.99	13	.02	42	.05
33—33.99	..	..	3	.00
34—34.99	..	..	66	.08
35—35.99	..	..	29	.03
36—36.99	47	.07	6	.01
37—37.99	..	..	..	..
38—38.99	..	..	..	..
39—39.99	..	..	1	.00
40—40.99	30	.05	..	..
41—41.99	..	..	..	..
42—42.99	..	..	..	..
43—43.99	5	.01	..	..
44—44.99	..	..	..	..
45—45.99	..	..	33	.04
46—46.99	..	..	..	..
47—47.99	..	..	..	..
48—48.99	..	..	..	..
49—49.99	..	..	..	..
Total	66,220	100.00	85,853	100.00

investigations. Tho made at different times, by different agents acting under different directions, and tho obtained in part from different establishments, the two collections of data yield the same conclusion when they are given the same scope and analyzed in the same way.

II

But, granted that the Bureau's original data are trustworthy, can the same be said of the Bureau's index number? Which methods of analysis are preferable — the Bureau's methods, which make out an advance of relative wages from 100.3 in 1890 to 105.5 in 1900, or Moore's methods, which reduce the advance almost to zero?

In most respects, the advantage is all with the Bureau of Labor.³ (1) It is better to give data separately for the number of working hours per week and for the wages per hour, than to lump the two together as wages per week. Tables like Moore's effectually conceal the increased leisure which the working class won between 1890 and 1900 — a decided gain in itself, whether weekly wages increased or not. The Bureau of Labor shows definitely the degree of this gain, and also shows that the reduction of hours partly offsets the advance in money income arising from increased wages per hour. (2) It is clearly better to include females as well as males, and (3) better to include as many industries as possible — provided always that satisfactory data are available. (4) In measuring average rates of change, it is better to reduce the actual wages to percentages in the first place, as the Bureau does, and then to average these percentages, than it is to begin by computing average actual wages as Moore does, and then to reduce these actual wages to percentages. For there is danger that in averaging

³ It should be noted that the chief aim of Professor Moore's investigation was to determine the relative variability of wages on the two census years, and that his average wages were made to serve this purpose. Hence the following demonstration that the change in average wages is not the most accurate measure of average change in wages affects neither the validity nor the importance of Professor Moore's main contentions.

actual wages a relatively small change in the wages of highly paid men may offset a relatively large change in the wages of poorly paid men. Moreover, average actual wages for men following unlike occupations in different industries are notoriously delusive. The results are determined by the numbers reported as receiving each of the specified rates of pay, and it is exceedingly difficult to make sure that the number of men for whom satisfactory pay rolls can be had are representative of the numbers actually employed at each rate. To approximate the average rate of rise or fall in wages is a more feasible aim than to approximate the average actual wage, and the Bureau of Labor has been well advised in limiting its efforts to the former.¹

(5) Moore's plan of distributing his data in groups according to weekly rates of wages with fifty-cent or dollar intervals was forced upon him by the tables of his source. But the procedure may distort the average; for changes in wages which do not transfer wage-earners from one group to another cannot appear, and small changes on the margin between two groups are magnified into changes from the mean of one group to the mean of the next.

But there is one point at which Moore's method is more logical than the Bureau's. As has been said, Moore weights the mean of each of his wage-groups by the number of men contained within the group, while the Bureau pays no attention to the unlike number of persons following each occupation in computing the average relative wages for the separate industries. To treat occupations followed by a score of men as equal in statistical importance to occupations followed by hundreds or by thousands is theoretically indefensible, when the aim is to measure the average change in wages.² But the practical effect of this error in method is not great. Two computations, alike in all respects except

¹ "Methods of Presenting Statistics of Wages," *Quarterly Publications of the American Statistical Association*, Dec., 1905; vol. ix, pp. 328-329.

² Of course, no errors which this procedure introduces into the averages for any industry are corrected when the Bureau, in striking its grand averages, subsequently weights the figures for each industry by the census returns for the aggregate sums paid out in wages.

that in the first occupations are treated by the Bureau's plan, and that in the second occupations are weighted by the numbers employed, give nearly the same grand averages. The first makes relative wages per hour in 1890 and 1900 100.5 and 105.3 respectively, while the second makes the figures 100.7 and 105.0.

This review of the methods followed by Professor Moore and by the Bureau of Labor suggests that the averages obtained in the preceding table by applying Moore's methods to the Bureau's data may misrepresent the facts.

The table has, in fact, one merit and several defects. It corrects the Bureau's error of treating all occupations alike, irrespective of the number of employees; for in this table every occupation counts in proportion to the number of men for whom the Bureau of Labor collected pay rolls in 1890 and 1900. The defects of the table arise from the use of Moore's methods. (1) If the artificial grouping of the data is dropped and average wages are computed accurately by multiplying the exact weekly wages in each occupation by the number of recipients, before adding the products and dividing by the whole number of wage-earners, the results are changed from 100.0 in 1890 and 100.3 in 1900 to 100.0 and 100.9 respectively. (2) If actual wages are converted into percentages at the outset, on the basis of average rates for 1890-99, the results are further changed to 101.7 and 103.2. (3) If this change in weekly rates is analyzed, it is found to result from an average reduction of relative hours per week from 100.7 in 1890 to 99.5 in 1900, and from an average increase in relative wages per hour from 101.0 to 103.7. (4) Males in 26 industries covered by the Bureau of Labor, but not by Moore, received an average increase in rates per hour from 98.9 to 107.5 and (5) females, not included by Moore, received a corresponding increase from 98.5 to 105.5. Each of these corrections serves to make the average rise of wages greater — to bring the figures closer to the Bureau's results and remove them further from Moore's. Summing up all the changes and including all the material,

we have an average reduction of relative hours from 101.1 to 98.2, an average increase in relative wages per hour from 99.9 to 105.3, and an average increase in relative wages per week from 101.0 to 103.4. These results are all so close to the Bureau's own figures that it makes little difference which are used.

The Bureau's data have been submitted to one further test. In the preceding computation the industries as well as the occupations are weighted by the number of men for whom pay rolls were obtained in 1890 and in 1900. It may be better to use these weights only in striking averages for each industry, and then to weight the average for each industry by the census returns for number of employees in 1900. If grand averages are made up in this way, they show a reduction in relative hours per week from 100.6 to 98.7, an increase in relative wages per hour from 100.7 to 105.0, and an increase in relative wages per week from 101.3 to 103.6. Again, the increase in wages is only a trifle smaller than that found by the Bureau of Labor.¹

Clearly, then, the results which Professor Moore deduced from Professor Dewey's report afford no reason for doubting that the Bureau of Labor's index number represents fairly the trend of wages in manufacturing industries. On the contrary, the former investigation bears convincing testimony to the high character of the latter.

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¹ The Bureau's results for 1890 and 1900 are, relative hours per week 100.7 and 98.7, relative wages per hour 100.3 and 105.5, relative wages per week 101.0 and 104.1.

BOOKS RECEIVED

- Brindley, J. F. *History of Taxation in Iowa*. Iowa City: State Historical Society. 1911. pp. 493 + 476. (Iowa Economic History Series.)
- Byington, M. F. *Homestead: The Households of a Mill Town*. New York: Charities Publication Committee. 1910. pp. 292. \$1.50. (The Pittsburgh Survey.)
- De Leener, G. *Le Commerce au Katanga: Influences Belges et Etrangères*. (Mission dans le Katanga I.) Bruxelles: Misch et Thron. 1911. pp. 143. 3fr. 50. (Institut Solvay.)
- Engels, F. *Philosophie Economie Politique Socialisme* (Contre Eugène Dühring). Paris: Giard et Brière. 1911. pp. 418. 10 fr. (tr. by E. Laskrine.)
- Fairlie, J. A. *A Report on the Taxation and Revenue System of Illinois*. Urbana: Special Tax Commission of Illinois. 1910. pp. 255.
- Fisher, I. *The Purchasing Power of Money. Its Determination and Relation to Credit, Interest and Crises*. New York: Macmillan. 1911. pp. 505. \$3.00.
- Fitch, J. A. *The Steel Workers*. New York: Charities Publication Committee. 1910. \$1.50. (The Pittsburgh Survey.)
- Gemähling, P. *Travailleurs au Rabais. La Lutte syndicale contre les Sous-Concurrences ouvrières*. Paris: Blond. 1910. pp. 432.
- Grice, J. W. *National and Local Finance. A review of the relations between the central and local authorities in England, France, Belgium, and Prussia, during the nineteenth century*. London: P. S. King. 1910. pp. 404. (No. 20 in the series of Monographs by writers connected with the London School of Economics and Political Science.)
- Harpell, J. J. *Canadian National Economy. The Cause of High Prices and their Effect upon the Country*. Toronto: Macmillan of Canada. 1911. pp. 182. \$.50.
- Hollander, J. H. *David Ricardo: A Centenary Estimate*. Baltimore: Johns Hopkins Press. 1910. pp. 137. \$1.00. (Series XXVIII, No. 4.)
- Hutchins, B. L., and Harrison, A. *A History of Factory Legislation* (2d edition, revised). London: P. S. King. 1911. pp. 298. (No. 10 in the series of Monographs by writers connected with the London School of Economics and Political Science.)
- James, E. J. *The Origin of the Land Grant Act of 1832 and Some Account of its Author*. Urbana: University of Illinois. 1910. pp. 139. (The University Studies, Vol. IV, No. 1.)
- Johnson, E. R., and Huebner, G. G. *Railroad Traffic and Rates*. New York: Appleton. 1911. pp. 523 + 448. \$5.00.
- Lees Smith, H. B. *India and the Tariff Problem*. London: Constable. 1909. pp. 120. 3s 6d. (No. 17 in the Series of Monographs by writers connected with the London School of Economics and Political Science.)

- Lessine, L. *Introduction générale à l'étude de l'Economie politique*. Paris: F. Alcan. pp. 536. 10 fr.
- Ludington, A. C. *American Ballot Laws, 1888-1910*. Albany: University of the State of New York. 1911. pp. 220. (New York State Library Legislation 40.)
- McFarland, R. *A History of the New England Fisheries*. New York: University of Pennsylvania. 1911. pp. 457. \$2.00.
- Patten, S. N. *The Social Basis of Religion*. New York: Macmillan. 1911. pp. 247. \$1.25.
- Phillips, M. *A Colonial Autocracy. New South Wales under Governor Macquarie, 1810-1821*. London: P. S. King. 1909. pp. 336. (No. 16 in the Series of Monographs by writers connected with the London School of Economics and Political Science.)
- Pillado, R. *Estudio sobre el Comercio Argentino con las Naciones Limitrofes*. Buenos Aires: J. H. Kidd. 1910. pp. 191.
- Plechanow, G. and Dietzgen, J. *Die Logischen Mängel des Engeren Marxismus*. München: Verlag der Dietzgenischen Philosophie. 1910. pp. 753.
- Roland-Holst, A. *Josef Dietzgens Philosophie gemeinverständlich erläutert in ihrer Bedeutung für das Proletariat*. München: Verlag der Dietzgenischen Philosophie. 1910. pp. 91.
- Seligman, E. R. A. *The Income Tax. A Study of the History, Theory, and Practice of Income Taxation at Home and Abroad*. New York: Macmillan. 1911. pp. 711. \$3.00.
- . *Théorie de la Répercussion et de l'Incidence de l'Impôt* (tr. by L. Suret). Paris: Giard et Brière. 1910. pp. 551. 15 fr.
- Shaw, B. *The Common-Sense of Municipal Trading*. New York: Lane. 1911. pp. 120. \$.75. (The Fabian Socialist Series, No. 5.)
- Smith, Ellen. *The Reigate Sheet of the One-Inch Ordnance Survey. A Study in the Geography of the Surrey Hills*. London: A. C. Black. 1910. pp. 110. (No. 1 in the Series of Geographical Studies issued in connection with the London School of Economics and Political Science.)
- Taylor, F. I. *A Bibliography of Unemployment*. London: P. S. King. 1909. pp. 71. (No. 1 in the Series of Bibliographies by students connected with the London School of Economics.)
- Toussaint, A. *Emplois Industriels des Métaux Précieux. Étude Économique et Juridique*. Paris: Giard et Brière. 1911. pp. 696. 12 fr. 50.
- Uyehara, G. E. *The Political Development of Japan, 1867-1909*. London: Constable. 1910. pp. 296. 8s 6d. (No. 19 in the Series of Monographs by lecturers and students connected with the London School of Economics and Political Science.)
- Vorländer, K. *Kant und Marx. Ein Beitrag zur Philosophie des Sozialismus*. Tübingen: J. C. B. Mohr. 1911. pp. 293. M. 7.
- Zwiedineck-Südenhorst, O. v. *Sozialpolitik*. Leipzig: Teubner. 1909. M. 10.

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STREET-RAILWAY RATES, WITH ESPECIAL
REFERENCE TO DIFFERENTIATION

SUMMARY

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THE purpose of this article is to develop the economic principle at the foundation of reasonable street-rail-

way rates, and also to indicate certain of its applications. It is the writer's opinion that the rate-making problem is fundamentally the same for street railways and for steam roads. In each case we must recognize the presence of differential charges and provide for their equitable distribution. That the principle of differentiation is modified, and superficially quite changed, in its application by street railways, is true. But this may be due chiefly to the decidedly retail and therefore customary character of street-railway fares.

To speak of differentiation in street-railway rates in the United States, bringing over the idea from steam roads, appears to be like passing from the subject of mosquitoes in New Jersey to that of snakes in Ireland. Hence the need of considering what is meant by differentiation in current railroad practice.

I. THE PRINCIPLE OF DIFFERENTIATION

The readers of this journal may be assumed to be acquainted with the theory of railroad rates. Hence we shall merely review, without explanation, the points that are of general, but not of peculiar, significance for street-railway practice. These general propositions are, of course, stated in a way to lead up to the more specific matter to follow.

The growth of fixed capital and its specialization brings into existence heavy "fixed charges" which cannot be definitely apportioned as costs to the particular goods to whose production the capital has contributed. Railroads, both steam and street, show a greater ratio of capital to labor employed than any other considerable branch of industrial enterprise; hence it is here that the unapportioned part of cost

is greatest. Continuous utilization of full productive capacity is the way to reduce fixed charges per unit of product, and thus to reduce this portion of the cost of goods. For this reason it is expedient to make a special concession in price wherever considerable new and additional business (other than peak-load business) can be obtained by a railroad.

The expediency of lowering rates does not apply to all classes of goods or services, nor is it conditioned by resemblances or differences among the goods dealt with; only those that respond to a concession with a much increased demand can economically be favored. Articles that are relatively cheap in proportion to bulk or weight will be scarcely carried at all unless favored as regards fixed charges. Articles capable of bearing a higher rate (not sensitive to reductions or advances) do not lose, but gain, if the favored articles that would not otherwise be carried make any contribution at all towards meeting fixed charges. The classification of freight in accordance with the differential principle is the great example of the variation of rates with little regard to total unit cost.

A differential is one of a system or schedule of quantitative differences graded according to some principle not determined by the intrinsic qualities of the things differentially treated. But varying differentials that are adjusted in detail but roughly and according to convenience may produce external uniformity of price, *i. e.* a differential distribution of fixed charges may complement and equalize variations in prime cost. The lower limit beyond which the reduction of a rate by differentiation cannot economically go is the separable cost, or prime cost, of the particular good or service. For steam roads this as a rule is considerably less than a propor-

tionate share of operating expenses; *i. e.* some of these, as well as most capital charges, do not vary with the volume of business. Prime cost varies with conditions and circumstances, while reliability and stability in rates are necessary in order that business may adapt itself to them, hence only average adjustments of rates to prime cost are practicable.

A lateral limitation upon differentiation is constituted by the moral feelings of the public, which insists that the same price be charged for the same commodity under the same conditions, *i. e.* without distinction of persons. This is another reason for simplicity and stability of rates.

There is less differentiation in rates for passenger service than for freight, largely for the reason just given.

Total cost per unit of business cannot be the rule for price or rate-making. Total unit cost is itself reduced by additional business, hence the rate should be determined with reference to this possible variation.

Economy — the performance of the greatest service at least cost — is at the foundation of the differential system, tho monopoly has facilitated its development and application.

So much for the principles determining railway rates in general. A corollary relating to certain peculiarities of the economic situation of branch steam railroads or extensions requires somewhat fuller statement because of its direct application to a fundamental point of street-railway rate policy.

Branch lines are often acquired and carried year after year by important railroad systems without regard to the fact that the books of the former show a continual deficit. Traffic is likely to be sparse on

such an out-of-the-way line. Even with rather high rates, it is often unable to pay fixed charges. None the less it is probable that the main line can well afford to continue to pay the deficit.

It may be assumed that the branch line discharges and receives its freight from the controlling road. That is likely to be what it is controlled for. If the main line is 1000 miles long, and the branch line 50, then we may assume that the net receipts above movement cost for the branch line are not much more than one-twentieth the net receipts above movement cost for the main line from the same freight. But the main line will have a much greater density of traffic, hence the freight from the branch need be required to pay, when it gets on the main line, perhaps only one-tenth of the fixed charges per ton-mile which it must pay on the branch line in order to meet "total" cost. The main line will also obtain a much longer haul. It may, therefore, gain enough to be able to pay the deficit of the branch line and still have a large profit from the business contributed by the latter. The main line receives a sufficient consideration in the opportunity to make profits from the business after it gets to that portion of the system. If necessary, the long-haul traffic that would not be otherwise obtained may reasonably be required to pay less than its pro-rated share of fixed charges. This method of dealing with branch business amounts merely to carrying it part of the way for less than an *average* unit-cost, the basis of the average being rather arbitrarily determined. But deviation from type is the essence of differentiation. The financial carrying of an apparently unprofitable branch may thus be quite economical, if due attention is paid to the differential nature of charges and profits.

The practice and precedent of steam railroads are altogether in favor of differential rates, the differentiation having no direct relation to "total" cost, and depending on a difference in the kind of traffic only so far as that difference may be connected with difference in ability to pay and also because external differences in traffic are naturally a great facility in classification. This differentiation of rates has been a development due entirely to the initiative of the railroads themselves. And the extent to which the development has been carried in the United States, tho not without its inconvenience and embarrassments to the public, is one of the most important respects in which American railroads show their greater progressiveness over those of other countries where the development of commerce has been hampered by a failure to carry the application of the principle so far.

II. CHARACTER OF THE STREET-RAILWAY FLAT RATE

In passing from steam-railroad to street-railway enterprises, the principle of the differential rate certainly is modified. The conditions here, as regards great importance of fixed charges and of expenses that do not vary with the business done, are altogether favorable to some manifestation of the differential principle. But most would say that the prevailing flat-rate "principle" is quite in contrast with the differential practice of "charging what the traffic will bear," and that therefore the basis of street-railway rate making must be quite different from that of steam-railroad rate making.

In one respect it is obvious that the flat rate is quite on all fours with the principle of charging what

the traffic will bear. There is absolutely no attempt to make the charge conform in detail to the character of each particular service or class of service. The charge for an individual service is not based upon a calculation of its individual cost, and there is no direct relation between the two. If there were no other resemblance between the developments in the two situations, this fact of itself would indicate that their economic foundations are the same. But let us see why it is that in this country the nickel street-railway fare is seldom substantially departed from, regardless of the character of the service rendered.

In the United States the nickel is pretty nearly the bottom price for any service for which it is worth taking the trouble to collect for, unit by unit, in cash. It is true that newspapers sell for less, but the customary price has probably become established largely with reference to payment by the week or month, *i. e.* for combined sales. It is significant that the demand for a reduction of fares on street railways takes the form of trying to obtain more than five tickets for a quarter. Most people would not appreciate a reduction that called for a frequent making out of four cents change in cash. The passenger would rightly consider the trouble of making change a part of the cost of his trip. Copper currency is also considered by many disagreeable to handle, perhaps because of its formation of verdigris and its apparent affinity for dirt. Hence the nickel is for many purposes the natural stopping point in the downward movement of the price of a small service. The odd cents of the bargain counter are a phase of something of the nature of an advertising device or of an expense devoted to attractive packings rather than a result of true price determination. It is only

for children and for the very poor that the cent is a real and important price unit. The nickel being thus a bottom price, and the bottom of a thing being naturally flat, the flat-rate principle is to a large extent an accidental result of our system of coinage. In Germany the 10-pfennig piece, worth 2.4 cents, takes a similar position as the unit of street-railway charges.

It is by no means claimed that this nickel bottom is impenetrable. The price for street-railway service may, and frequently does, drop below that, but always with a tendency to make the nickel after all the fundamental point, from which a slight departure is made almost by way of exception, as, *e. g.*, by selling more than five tickets for twenty-five cents. If the fundamental rate had not received a good deal of support from the conditions and tendencies of street-railway service it would not have held. But it has never been conclusively proved that the street railways could get along with much less. Coincident with the cheapening of operating costs resulting from the introduction of electric traction, there came combinations of previously independent roads, and transfers. Thus the passengers obtained a concession to their convenience and a presumably somewhat longer average ride in lieu of a possibly lower fare, and they were doubtless well satisfied with their bargain. The public has also been well pleased to have the street railways build extensions farther and farther into the suburbs. It may be laid down as a general proposition that the people prefer to obtain more for the nickel rather than to pay less and on the average get less.

The managers of the street railways, on the other hand, have found the nickel profitable in most cases,

and they, as well as the public, have at least secretly recognized the convenience and business advantages of having the rate of fare fixed by custom at the nickel. This has given them a fixed point on which to base their calculations and has promised them great gain in the future as business increased in density, and thus in profitableness. For the margin between operating expenses per passenger and the nickel collected is, for every increase in the total number of passengers, more and more a contribution to profits as distinguished from interest. The fixed charges naturally do not keep pace with growing business. Extensions of road and the lengthening of the ride have doubtless cut into these increasing returns of street railways, and operating expenses also have increased in a way to encroach sometimes on the margin of net earnings in each nickel. But even tho the nickel has not yielded all the profits that street-railway interests have looked forward to, the public is nevertheless entitled to claim the benefits of the flat-rate principle, just as street-railway capitalists would have claimed, and doubtless obtained, what the nickel would have given them, had operating expenses gone down instead of tended upward.

A street railway is an extreme example of a kind of enterprise where a large business obtained by the concession of a low rate is essential to success. The enlightened policy is to make the greatest possible use of the great amount of fixed capital sunk in the plant, which means putting the price very little above prime cost. A management that intends to stay with a street railway is not seriously thinking of any other policy. It happens that in the United States five cents has been the most convenient *low* rate at a comfortable distance above prime cost. Hence in-

fluences tending to determine rates, operating from the side of both corporations and the travelling public, have come to an equilibrium at that price.

The maintenance of the five-cent flat rate ought so long as possible to be a fixed principle of street-railway policy. If it is to be departed from, that should be accomplished gradually and as a last resort. Every possible device should be adopted to save this rate in its fundamental application, that is, as regards the *traffic between residence and business sections*. The public has a vested right — morally, if not legally, — to the nickel fare for this service. Suburbs have been developed and homes have been built by workingmen and others on the assumption that the nickel fare from home to the business center was something which they could reckon with. If street-railway stocks will depreciate unless earnings are increased, real estate values in the suburbs, on the other hand, will go down, if the rate of fare is increased. The owners of stocks should not be protected from the effects of their miscalculations at the expense of others whose calculations were more reasonable, and whose interests are rather more bound up with the good of the community. For it is a fundamental public interest that there be cheap and rapid means of transportation to the suburbs, in order that some of the evils of congestion of population, with its attendant injury to the public health, may be avoided or cured.

External uniformity and constancy of price conform to the requirements of the situation. Street-railway service being rendered for a small price per unit, custom is a factor in determining what shall be charged. The customary price hit upon has been the nickel, because that is the coin most convenient for small retail transactions, upon which all the interests at

stake have been most nearly able to agree. Retail prices in general tend to become customary. Furthermore, any service which is to be popular, in the sense of being rendered to practically all the people of a city, must not only be provided at as low a price as possible, but the rate must be well understood and well established.

The flatness and the stability of the nickel rate being thus disposed of, let us consider next the question as to how far the flat rate actually is in practice and in detail the opposite of a differential rate.

The economic essence of the differential principle is, not that prices are different for similar services, but that, for two services substantially similar and therefore "costing" about the same amount, one is made to contribute to fixed charges and profits only (say) 10% above prime cost, while the other contributes 50%. The result is that the price in the two cases is as 11 to 15, that is, there is a difference in price. But this difference is merely an incidental result of the principle involved, and by no means essential. If the one service costs 5 and the other $7\frac{1}{2}$, but both are performed for a price of 10, the differential charge is there; since the net return is 100% in addition to prime cost in the one case and but 33% in the other. Here the result of the differential charge is uniformity of price. In this illustrative case the uniformity is merely an accidental result; it is not in general wrong to think of the differential principle as causing differences in prices.

In the case of street railways the uniformity of the charge is no accident. True, the scope of the operations of the differential principle is restricted. It is not free to produce the remarkable effects that it sometimes does in steam-railroad charges. But pas-

sengers are, nevertheless, in a sense, differentially treated, by very reason of the fact that the rate for all is a nickel.

Business on a given line during certain hours of the day may not be sufficient to justify the running of more than a minimum schedule of cars. There is a certain minimum frequency of street-car service — doubtless varying from city to city — which the public will require. The necessity of giving employees something like a full day's work also causes unfilled cars to be kept running at slack hours. Under such circumstances, new passengers riding on one of the cars gathering few passengers cost the company practically nothing. Here a nickel may be considered to be entirely net return. On some other line of the company the traffic is probably dense enough all day long to warrant the operation of more than a minimum schedule. Here added passengers will cause the addition of cars, and a car load of passengers must be taxed with the operating expenses of the car before we get a net portion of each nickel. In the rush-hour period the same principle applies, with a modification. Since the rush hour is the period of maximum loading, if cars are supplied in proportion to passengers at that time, the supply of equipment must increase to a point where some of it is used for rush-hour passengers only. In this case some of the interest and depreciation on equipment is prime cost. In other words, the rush-hour variable cost, or prime cost, per car load of business (assuming the car load to be a constant quantity) is greater than at any other time. If the car load remains the same, the margin above prime cost from each nickel will be much reduced. In practice the situation is met by increasing the load, so that the number of nickels per car trip is great

enough to more than overbalance the increased prime cost per car load. In this way the rush-hour business is possibly the most profitable business of street-railway companies. As regards the passenger riding against the current in the rush hour, however, the prime cost of carriage is again practically nil. There is plenty of differentiation in the system of street-railway charges, tho the expression of the principle is not the same as with steam roads.

So far as practice knows an opposite, the nearest to the true opposite of the differential system of rates is the zone system, according to which the charge made is modified according to distance traversed. But even in this case, so antithetical are railroad rates to adjustment on the basis of cost, the approximation to a total-cost system is very remote.

Regard for total cost per unit should take account of the density of traffic on different lines, as well as distance travelled. But this, so far as the writer knows, has not been attempted. The flat-rate system, by being *more flat* than the zone system, only comes much nearer to being an adequate expression of the economic factors which produce the manifestly differential system of steam roads. The practice of charging the same or approximately the same rate for the long haul and for the short haul included within it is a phase of the differential system of the steam roads. There is an evident and essential similarity between this and the flat-rate system of the street railways.

Whether the term differential should be applied to the relation of the flat nickel rate to the contributions to profits made by different classes of passengers, may perhaps be questioned. That is a matter of terminology. The conception of a differential return

to land as the foundation of the theory of economic rent is older than are the railroads. The differential return here is a result of uniformity of price for products of varying cost; thus the situation is entirely analogous to the differential contributions of street-railway passengers to profits. It would appear, therefore, that differentials are a part of the street-railway flat-rate system as much as of the steam-railroad system of classification of freight and passengers.

Passenger business, which is practically the whole business of street railways, does not lend itself to differentiation as readily as freight business. Even the railroads differentiate less in their passenger traffic. The well-to-do citizen will not submit to being charged a double price where the workman is charged half as much for the same service; at least he does not want it done openly and without the semblance of a difference in the quality of service. Hence this kind of differentiation will not work well. The street railways, especially, could not well separate the different classes of passengers without great cost to themselves and intolerable inconvenience to the travelling public.

Most of the business of a street railway, moreover, will respond to the nickel rate in a way to yield the maximum profits at about that point. The business that would readily pay more even for somewhat better accommodation is relatively small. The additional business that could be obtained by a slight reduction in price is also not important. These are further phases of the fact that the nickel is a low-level price for such a service, at which the various factors tend to be at equilibrium.

Where quantity of business is a considerable factor in its total unit cost, and where an enterprise ministers

to several lines of production or service which are different from each other in respect of their responsiveness to a lowering of charges, there is room for the application of the differential principle. The street-railway business conforms to the requirements of this proposition, yet the flat rate, instead of external differentiation, is the rule. This no longer appears paradoxical when we see that the *nickel calls forth the greatest volume of traffic* for practically all the classes the street railways serve. The single rate for diverse services and the varying rate for substantially the same service have an identical economic foundation. There is evidently every reason why departure from the flat rate should be permitted for sufficient reasons, but we must not forget that there must also be good grounds for the fact that there is actually so little departure from it. Those grounds make it entirely consonant with the principle of differentiation.

The absence of causal relation between the total cost of the particular item of street-railway service and the price paid for it is still the essence of the situation, but the differential element in the price charged results from it, instead of in detail determining it. The flat rate can therefore be maintained only by the inclusion of business on which the margin of net return in the nickel is large along with that in which it is small, — the fat with the lean. This situation is of the essence of the flat-rate principle, that it cover both the relatively profitable and the relatively or absolutely unprofitable business, and that the one shall make up for the other and the other be balanced by the one. The Post-Office sustains itself on a flat-rate system of charges maintained in just this way.

The "fat" is composed of the short rides taken within the business center; the home-to-work traffic

is the complementary "lean." Both because of the time of day when it occurs and because of its balanced character, the inner-city traffic is highly advantageous to the railway that serves it. But its amount depends upon the volume of daily traffic to and from the business center. There is a natural connection between these two. They should therefore go to the same company in order that the high differential return from the one may compensate for the high prime cost of the other. Consolidation of street railways thus not only facilitates the rational development of a transfer system but it also appropriately unites fat and lean.

We have mentioned some of the peculiarities of the economic status of branch railroads. When there is no pretense of paying according to distance travelled, as is the case with American street railways, it is obvious that an extension or branch, if it does not pay directly, cannot pay through carrying passengers to a main line where they ride a long distance. The nickel pays for the entire ride, and the longer it is the more it costs the company. But there is another way in which extensions that are not profitable according to their showing as treated separately, may nevertheless pay indirectly. A city street-railway system is interested in the development of its business center. The development of the business center is dependent upon the growth of a tributary population, and this involves the development of outlying residence districts. The development of outlying residence districts depends upon the building of extensions. The business man who comes to town in the morning will perhaps spend two nickels for short rides in the business section. And his wife shopping in the afternoon may spend two more. The only way such

profitable business in the center of the town can be made to grow is by increasing the residence population tributary to the business center. To do this, cheap transit must be provided. Of course there are limits beyond which the street-railway system cannot afford to extend its lines for a nickel fare. But those limits are always something less than what they would be if an extension were always required directly to pay for itself. Not only will such an extension develop business which will afford more and more nickels as the neighboring population grows, but some of the increase of the business center traffic of the old lines may properly be attributed to it. This contribution, however, is general or common to whatever lines serve the latter traffic rather than confined to those controlled by the company building the extension. But the American city is in general served by a single inclusive system, which thus gets the full benefit of extensions and outlying lines.

It follows from the above that it is *not* necessary that every line of a street-railway system should pay for itself separately and directly and immediately. In every business large outlays are made with no expectation of immediate and direct return. Outlying lines of street railways in particular come under this principle. It is a very difficult practical problem to determine just how much an extension may economically be allowed to fall short of paying for itself. But in general a street railway should consider all the possibilities beforehand and take the consequences of its judgment. Because of the vested interests impaired by the advancement of the rate of fare on any suburban line, the general principle of a flat rate should not be encroached upon because of small losses on outlying lines incurred by a company having a network of lines extending through an entire city.

If there is any sort of traffic which on grounds of public policy should be allowed to retain the customary five-cent rate to the end, it is just this traffic between home and work. The "fat" profits should not be taken here. It is even a debatable question whether a municipality should not, if necessary, subsidize traffic between healthful suburbs and the business center.

III. CERTAIN APPLICATIONS OF DIFFERENTIATION IN STREET-RAILWAY PRACTICE

There are two points of view from which a particular rate should be judged, the one that of the railroad as a business enterprise, the other that of the travelling public. Each rate question raised should be adequately studied on its individual merits from each of these points of view, but always with due regard to the fact that the rate under consideration will be part of a system of rates more or less differential in its nature.

The most important question at issue between the street railways and the public is as to the limit of distance which a passenger may expect to be carried from the center of the city for five cents. It is a public interest and should be a fundamental point of public policy to make the five cents carry the passenger as far as possible. But in many instances the street railways have done all the public should require of them in this direction, partly because they have wished to exclude competitors from the exercise of franchises that they have expected to become valuable. The present task is one of equalization and adjustment of the limit of carriage for a single fare, and of bring-

ing it up to a reasonable standard in certain instances, rather than of generally extending it.

Whether that standard is 10 miles or something short of it we shall not attempt to say. It certainly is more than five. A mile for a cent is, in the opinion of many practical street-railway men, about the limit of the average ride for street-railway service. But the limit of distance of transportation from the business center is a question of the maximum, not of the average. Tho the length of ride on some extensions of surface routes appears to be unduly great, even after allowing these long routes some benefit of differentiation, yet if such lines are a part of a comprehensive system, that fact should be taken into account. The showing of the extension separately considered is not conclusive as to whether the five-cent rate is reasonable for it or not. We have above seen how the principle according to which a loss on a branch road may be no loss is, to a degree, also applicable to street-railway systems. The differential principle may, from this viewpoint, be applied with great force to favoring long riding into the suburbs. So far as increased short riding at the business center is a direct consequence of carrying more people to that center, it is not even necessary that the prime cost of the latter carriage shall be less than five cents, for it contributes largely, tho indirectly, to the profit from the short rides at the business center.

Even if the street-surface railways have sometimes over-reached themselves in the matter of extensions, it is not entirely clear that the public should be expected to pay the cost through an increased fare on such lines. The natural conditions of surface street-railway service protect such enterprises from any extreme development of long-haul business. The time con-

sumed makes the street-surface road the practicable means of transportation for only a limited distance from the business center. The outlying lines of surface railways in the very large cities will, in the long run, be used chiefly as feeders for more rapid means of transit. Long rides on such surface lines to the business center will then be exceptional, and will probably occur at such hours as would make their prime cost less than a nickel — else the rush-hour traffic is not true to its name and does not care for speed. Hardly more than the maintenance of the *status quo* is necessary to give due consideration to all interests as regards these long or outlying lines.

Those who speak for the railways are prone to make too much of extensions of line as an indication of increase in the average length of ride. Such extensions are doubtless made in response to a growth of population, which also means that the distance between residence and business centers is becoming increasingly great. But tho some are now riding longer distances between home and work, others who walked before are just pushed beyond the walking limit, and many more are attending to errands within the business center by riding short distances instead of walking. As a city grows the number of rides always increases faster than population. With an increase in population of 30 per cent, rides may be expected to increase 60 per cent.¹ While the five-eighths of the passengers representing the old business are doubtless taking a longer ride, the three-eighths recently gained are quite as clearly relatively short-haul traffic. It is evident that the change does not certainly mean a significant increase in the average length of ride.

¹ This is a conservative statement. Statistics bearing on the relation between urban population and street-railway traffic may be looked for in the 1910 report of the New York Public Service Commission, First District.

The accompanying increase in density of traffic also favors economical service; and the per capita contribution of the citizens to the support of the railway has increased faster than the extent of the latter's permanent plant.

It is the essence of any just conception of street-railway rates that the long-haul traffic between residence and business centers should not be considered by itself. If it is correct to compute separately the cost of this traffic and of inner-city traffic, it is even more certain that three cents is too much for the latter than that five cents is too little for much of the former. The fact is that the two are naturally and economically bound together. No rate policy for outlying districts should neglect this consideration.

Were there not the prospect of rapid-transit lines (with their low operating cost per seat-mile) taking over most of the long-distance home-to-work traffic, a radical rearrangement of fares on outlying surface lines might soon have to be considered. The system of differentiation cannot specially favor relatively increasing long-distance traffic. A kind of business that barely pays prime cost can be carried comfortably if it will remain only (say) 10 per cent of the total; but its growth to be 20 or 30 per cent might bring disaster. The steam roads are now feeling the effects of the disproportionate growth of favored long-haul traffic between large urban centers. Further extensions of street-surface lines in the largest cities, other than for rounding out an existing system, are not much to be expected under a uniform 5-cent rate. It is to the rapid-transit lines that must be entrusted the preservation of the single fare from increasingly distant residence portions to the business centers of the largest cities.

The relation of transfers to the rate of fare on street railways is a vital one. It has been so persistently the practice of railway men to count transfers as passengers and to figure an average fare on this basis, that it appears to some to be the natural means of increasing revenues to charge for transfers as if they constituted an additional service. For some purposes it is important to know the number of transfers. But the unit of service rendered by the railway company is the passenger trip and the unit of payment for that service is the single fare. The changing of cars is an accident of a passenger trip. The number of times it has to be done is determined chiefly by the routing of cars, or by the choice of a place of residence in relation to place of work that disregards this accident or incident of the daily journey. The necessity of changing cars would not be disregarded by the public if the transfer involved an additional payment. Under a system of pay transfers a company could, by an artificial routing of cars with a view to making the most of transfer receipts, considerably increase its revenues at a disproportionate cost to the public. Under such circumstances the routing of cars would have to become a matter for detailed public regulation. It is altogether better to allow the company to route cars according to its administrative convenience with regard to the direction of the movement of traffic. It will then try to reduce the need of transfers as much as may be, thereby combining economical operation with accommodation to the public. So long as the passenger trip, and not the passenger mile, is the unit of street-railway service, any reasonable trip that cannot be accomplished on a through car should be made possible by the use of a "free" transfer.

Because of the different competing economic interests involved, the case of a joint rate between separate companies or systems is ordinarily different from that of transfers between cars of a single system. Transfers have very properly been made the condition of consolidation, or a cost incident to it — if indeed their reasonable use in the long run may be said actually to involve any increase of cost. Real competition (as to service, the rate being fixed), however, is in itself so advantageous that it may be to some extent accepted in lieu of more transfer points. The reason for a difference of policy, however, as regards requiring transfers (at five cents per passenger trip) between the lines of a single company and a joint rate (at six to nine cents) between those of different ones, evidently contains its own qualification.

Joint rates may well be more than 5 cents, except where the corporations involved are not really independent and competing. Where they are competitors, the public gains from the opportunity afforded for comparing them as to grade of service and to some extent choosing between companies. Competition as regards the quality of service offered, the rate being fixed, has a value to the public which other sorts of competition between monopolistic enterprises do not have. But where the public cannot obtain the benefits of competition because of the control of nominally separate roads by a holding company, there is ground for requiring what is actually a transfer, tho legally a joint rate, wherever general or geographical conditions justify it.

It is the stock argument of those who oppose free transfers that they mean a declining rate of fare or an increasing length of ride, or even both. If the transfer be counted as a passenger, which is the way

to arrive at a declining rate of fare, it is not at all likely that the length of ride for such a "passenger" has on the average even held its own. If the revenue passenger be taken as the unit, it may be that there has been an increase in the average length of ride (including in the single trip its continuation on another car). Of course one or the other of these arguments must lose its force when the two are combined. But granted that the ride is longer, and granted also that this has come about by reason of the general use of transfers, it still does not follow that the physical cost of carriage (the car mileage involved) has correspondingly increased, or increased at all. The long rides effected by transfer will be in directions or over routes not much frequented, else the company would through-route cars over them and avoid the necessity of transferring so much. The longest rides effected by means of transfers, it would be generally admitted, are those from outlying parts of town somewhat into the business center and then out again in a different direction. Such rides are taken at odd times and also in such a way that in part they are likely to be back load on cars otherwise almost empty. They are therefore rather profitable than otherwise to the company. This is doubtless rather generalized geography. Some restrictions of the transfer privilege are entirely just. The general allegation as to length of ride, however, of itself proves nothing. Chicago has recently taken steps to favor precisely such surface traffic from end to end of the city across the business center.

According to the idea of differentiation here presented, the differential character may find expression either in charging a varying rate for substantially similar services or in charging the same price for

services differing in character. A highly important differentiation in the service of street railways is observable in the different conditions of carriage and treatment for rush-hour and non-rush passengers, the former being crowded and in large numbers compelled to stand, while the latter are given room and seats enough and to spare. Whether this is a reasonable differentiation is a question upon which the public seems to have adopted an opinion against the practice of the railways. The question is a particularly urgent one in the case of the New York subway. How far is the crowding there an over-crowding? The easy way to dispose of the matter is to assume that the number and proportion of standing passengers is the measure of over-crowding. But this assumes that it is feasible to maintain the same quality of service in the rush period and in the non-rush period, quality of service being defined with reference to the wishes of the passenger, namely, a seat at will for the length of his ride.

Does it mean the same thing, either from the viewpoint of the passenger or from that of the railroad, to furnish a seat in the rush period and to furnish one in the non-rush period? During the rush hour the average passenger trip is longer, in other words the passenger at that time wants more for his nickel. On the other hand, the providing of extra and otherwise little used equipment and employees for the peak-load means, for the railway company, a greater cost of the service per physical unit at this time. The demand for seats may be four or five times as great at the rush hour as it is in the middle of the day. It would seem that the only way to deal with this situation is to admit the necessity of a different standard of service for rush and non-rush periods, in other words,

of differential treatment. If the rate of fare is to remain constant, it would seem necessary to allow a company to provide relatively fewer cars for its rush-hour than for its non-rush travel. This must be the case if the company is to receive the same revenue per car mile, since the longer ride means heavier loading, that is more passenger miles and more passengers in the car at the same time, the number of passengers (fares) per car mile remaining the same. It is possible that the railways should be allowed even a little more than this. Perhaps the revenue per car mile ought to be somewhat higher for the rush-hour service. True, it is not at all inconsistent with a correct theory of railway rates that the relatively invariable ("fixed" and other) charges apportioned to non-rush traffic should be great enough to allow rush-hour traffic to escape with comparatively little burden in addition to prime cost. But the staple business of a railway company, that which needs no encouragement and is on the contrary willing to put up with pretty bad service, is not the portion most likely to be favored. And the prime cost itself may be expected to be somewhat higher in the rush than in the non-rush hour. So it is clear that "a seat for every passenger" cannot be adopted offhand as the standard of service during the rush. Over-crowding may not be the same as crowding enough to compel some passengers to stand.

But for the uniformity of street-railway rates, which is not only generally established but well-suited to the economic and other requirements of the situation, the rush-hour passenger might justifiably be charged more than the non-rush passenger. *Vice versa* it is not unreasonable that he should, paying the same fare, expect to have to put up with a somewhat less comfortable ride at that time. There is

certainly little economic ground for an especially reduced fare for this service, even tho its cheap performance be of the greatest importance.

The recognition of the presence of differentials in the customary five-cent fare helps towards an understanding of the most important questions of public policy in relation to street-railway rates. It is true that external differentiation of charges is seldom to be considered. The street-railway fare should in general be simple and single, and in America this means "flat" at the nickel. Transfers between car routes of the same company, having little to do with costs, should have as little to do with rates; they do not ordinarily constitute a peculiarity of the passenger trip that deserves special consideration. But the problem of a proper standard for rush-hour service should be regarded in its relation to differentiation. Crowding during the rush hour should be defined by reference to prime costs as well as to physical conditions. Most important of all, the limit of carriage to residence districts distant from the business center should be determined by a rather refined application of doctrines of prime cost and of secondary profits, and, as regards the surface lines, with reference to the self-limiting nature of the service. Rapid-transit lines are the natural means of preserving, for the largest cities, the "single fare" to their distant parts.

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THE PAPER INDUSTRY IN ITS RELATION TO CONSERVATION AND THE TARIFF¹

SUMMARY

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I. GENERAL DESCRIPTION

ALTHOUGH the present process of manufacturing paper from wood pulp was introduced into the United States about 1867, it was not until 1890 that the industry entered upon a period of marked growth and development. Improvements and economies in the method of manufacturing were devised frequently after 1890, and in seven years the price of common news paper fell from seven to two cents per pound — perhaps the lowest price it has ever attained in this country. The gradual departure of newspaper publishers from their aversion to increases in circulation (once regarded as unprofitable) led to the familiar one-cent metropolitan dailies of Mr. Pulitzer and Mr. Hearst, and their innovation was followed by others

¹ This paper received the first prize in the undergraduate competition of 1911 for Bowdoin Prizes in Harvard College.

in rapid succession.¹ The expansion of the industry was especially remarkable after 1897, and by 1905 the capital invested in the entire paper industry had risen to \$277,000,000, and the annual product to \$188,000,000². The comparatively small annual turnover indicated by these figures is even more marked in the "newsprint" division of the industry — to which I shall confine myself in this discussion; here the annual product or turnover, \$36,000,000, was probably one-half of the capitalization.

The wood now generally used in the manufacture of news paper is spruce, cut in the forests of Maine, New York, Minnesota, and Southern Canada, whence it is floated by river, or shipped by rail, to the mills of New England, New York, and Wisconsin. Two kinds of pulp are required: mechanical and chemical. Spruce is raw material for the pulps, and the pulps are raw material for the paper. Mechanical pulp is little else than ground wood, produced by the erosion of the spruce when held in contact with common grindstones driven by hydraulic power at the rate of three revolutions per second. But the fibres of the mechanical pulp are not long enough to produce a strong paper, and there is accordingly added "sulphite" or chemical pulp made from the cooking or digesting of spruce or hemlock in huge brick-lined steel digesters containing a solution of sulphurous acid, which eats away the lignum cells of the wood and leaves the pure cellulose. After thoro mixing and bleaching, the mass of water-soaked stock (four-fifths mechanical pulp and one-fifth chemical pulp)

¹ Report and Hearings of the Select Committee of the House of Representatives appointed to investigate the conditions in the paper industry, 1906, p. 763. Hereafter referred to as "Hearings."

² Census Bulletin No. 80, p. 32.

passes to the endless wire cloth of the paper machine and then goes through several systems of cylinders and rollers which mat it firmly together, evaporate the moisture and produce a hard-finished uniform web of paper wound upon the reels as we commonly see it.

From this short description it will be evident that the equipment of a company carrying the manufacture through all of its stages consists of three parts: mechanical pulp mill, chemical pulp mill, and mill containing the paper machine.¹ The three mills of such a balanced company can be erected for about \$20,000 for each ton daily capacity of finished paper, or \$2,000,000 for a "hundred ton mill."² In the two last mentioned mills, steam power is generally used: in the chemical mill to cook the wood, and in the paper mill to dry the stock and to secure accurate control of the machine. In the mechanical pulp mill, however, steam power is too expensive, and here we find one of the two most important factors determining the location of a successful pulp mill. Water power is an absolute necessity. In order to comprehend the full significance of this fact, it will be well to consider the requirements of a mill producing 100 tons of paper per day — less than twice the amount daily consumed by a metropolitan newspaper of 300,000 circulation. Such a mill needs about 80 tons of mechanical pulp daily, and for each ton of pulp it is necessary to use from 75 to 100 horse power operating throughout the entire twenty-four hours — or about 7,000 horse power for the 100 tons. Now this is an enormous horse power, and of the total 1,647,969 horse power

¹ The machines vary in size, but are usually over 100 feet long, manufacture paper 120 to 150 inches wide, and cost about \$60,000 each.

² See estimates of Tariff Board, Report on the Pulp and Newsprint Paper Industry, 1911, p. 70.

developed in all industries by water wheels in 1905, not less than 717,989 was used in the paper industry.¹ In the last few years there has been a marked extension in the use of water power for electrical purposes, and as electricity can be transmitted for many miles, it becomes increasingly difficult for a pulp mill to survive in regions near large industrial centers where electric power is in demand for other purposes.²

Important as cheap power is, a second requirement is even more important in the location of a pulp mill, — proximity to large pulp wood areas. Cheap power and cheap wood are unquestionably the essentials for success in pulp production. Canada has these essentials to a marked degree; Maine still has them; but in New York the extensive lumbering operations have seriously depleted her once magnificent forests. England, having no pulp wood within her own borders, imports the pulp in a wet or half-dry state and manufactures, as well as imports, the finished product. Germany imports the wood from Austria, Finland, and Russia, and makes both pulp and paper. But, in general, inasmuch as 5,500 pounds of rough spruce are necessary to make one ton of paper,³ it can be laid down as fundamental that the location of a pulp mill is governed by nearness to raw material and not by nearness to market. Even the granting of favorable freight rates upon rough wood has served only in part to counteract the constant tendency in the United States to locate new mills farther and farther northward upon streams that drain the wooded areas.

¹ See Special Report of the Census Office on Manufactures, 1905, Part I, p. 514; also Census Bulletin No. 80, p. 36.

² See Special Report on Central Electric Light and Power Stations, 1907, showing increase of 900,000 horse power from 1902 to 1907 for electrical purposes.

³ See Hearings, p. 1051 and p. 1077.

Turning now to the distribution of the product, it may be said that in a certain sense there is no active market for news paper. The quality can be standardized, but news paper is not a commodity capable of ready sale because in the huge presses of the metropolitan papers the width of the press rolls varies considerably.¹ A publisher might have difficulty in securing upon short notice any considerable quantity of the desired size. There has arisen, therefore, in the "news" division of the paper industry, the custom of annual contracts² by which the manufacturer usually agrees to deliver upon the sidewalk outside the press-room such amounts (within the contract limits) as are required by the publisher, and in addition to keep in reserve stock at a warehouse, a two weeks' supply. There remains for the open market a comparatively insignificant portion of the total production. At any one time the reserve stock is so small that a three weeks' strike of the workmen in all paper mills (barring importation) would stop every newspaper in the country.

Another feature of the sale of news paper has perhaps occurred to many purchasers as they buy their copy from the news-boy. In the language of the economist, the demand is fluctuating and inelastic. It fluctuates over short periods because of sensational news happenings like political revolutions and earthquakes. It fluctuates also over long periods because of the waves of prosperity that stimulate advertising and thus increase the number of pages and purchasers. In the main, however, the demand is strangely inelastic, because a rise in the price of the blank white

¹ See *Paper Trade Journal*, November 11, 1908.

² See *Hearings*, p. 1555, for specimen of contract.

paper does not decrease the publisher's demand for it. The cost to him of the paper in a sixteen-page issue is one-half a cent, but he is powerless to raise his selling price from one cent to one and one-eighth cents on the ground of a rise in the price of white paper. Indeed, he is in the business not to curtail but to increase circulation, and he is so situated that variations in the price of his raw material cannot be shifted easily to the ultimate consumers. Of course, large diminutions in his profits in the long run will deter prospective publishers from investing their capital, and even in the short run may compel advances in advertising rates, followed, perhaps, by a decrease from 16 to 12 pages, and decreased daily sales. But it is evident that within very wide limits it is the publisher, the immediate consumer, and not the ultimate purchaser who is most affected by fluctuations in the annual contract price. A greedy monopoly, therefore, if complete and effective, might wield this quasi-taxing power to extort from the publisher of a highly remunerative newspaper, at least a share of the profits arising from highly skilful conduct of the business.¹

Before investigating the question of whether there exists such a greedy and effective monopoly, let us consider the advantages of large scale production in this industry. At the present time, some plants consist of only the paper mill proper; other establishments buy their chemical pulp; others grind but half their requirements of mechanical pulp. There seems to be no imperative necessity of conforming to the three mill type as above described. There is, how-

¹ Consider two newspapers of equal circulation, the same advertising rates and the same selling price, but one more profitable than the other. A monopoly could secure a higher price for paper from the former because there is no possibility of raising either selling price or advertising rates.

ever, one advantage in a large output of finished paper. The publisher of a large metropolitan daily dislikes to contract with a small company, which may operate but one machine of eight or ten thousand tons annual capacity. Many newspapers consume more than this amount annually, and if the manufacturer agrees to deliver paper up to his total capacity, any accident may cause him to violate the contract clause concerning reserve storage. The violation may have no disastrous consequence, but the possible inconvenience to the publisher is sufficient to induce him to patronize a company that never is forced to purchase in what is virtually a contract market. A combination of mills under one management has, in this respect, a decided advantage, for risks of accident can be widely distributed, altho a strike of the workmen in all mills of the combination may so accelerate the depletion of the reserve stock as to cause early embarrassment.

II. COMBINATION AND COMPETITION

In the late nineties, when the mania for industrial consolidation was so pronounced, the paper industry did not escape the general tendency, and the International Paper Company, or so-called trust, was formed in 1898 as the successor of about twenty-one individual concerns. At that time the company controlled probably 75% of the total output of news paper in the country; in 1900 its control had dropped to perhaps 65% of the total, in 1904 to 42%, and it is now (1911) probably about 30%. So far as it was designed to become a monopoly, it has not been successful. From the following figures it will be seen that in volume of business it has had no remarkable growth.

PRODUCTION OF NEWS PAPER IN THE UNITED STATES BY TONS

	Total	International Paper Co.
1889.....	196,053 ¹	.....
1899.....	569,212 ²	.....
1900.....	.....	370,000 ⁴
1904.....	912,822 ³	386,000
1907.....	.....	412,000
1909.....	1,176,000 ⁴	.....
1910.....	1,200,000 estimated	.....

Financially its success is even more questionable. Its outstanding bonds total over \$17,000,000, and its stock issue consists of \$22,000,000 6% preferred (upon which the dividends for the last two years have been but 2%) and \$17,000,000 of common stock, upon which no dividends have been paid since the year following the offer of the securities upon the market. Its capitalization is somewhat higher per ton of capacity than that of its most vigorous competitors, and there is ground for believing that its common stock was originally pure water.

The business policy of the trust has been very sharply criticised, especially with reference to its investment in timber lands. During its early years, part of the net earnings seem to have been invested in woodlands. In 1908 the company owned 912,685 acres in fee in the United States, 167,684 acres in Canada, and, through the medium of subsidiary companies, rented 2,689,280 acres of timber land in Canada. If it be true, as defenders of the company intimate, that these vast holdings constitute a valuable "secret reserve," it must not be forgotten that dividends can be paid therefrom only when the lands

¹ Census of 1900, Part 3 on Manufactures, p. 1020.

² Census Bulletin No. 80, p. 13.

³ Advance figures of Census Bureau. Tariff Board report, p. 21.

⁴ Hearings, p. 1102.

or timber are sold, or when the timber is manufactured at a profit. It is extremely doubtful whether the annual increase in value due to the rise in price of timber lands equals the profit that ought to arise from efficient operation of the mills. The investment in timber lands not only lends color to the charge of speculation, but it is a serious question whether the net earnings might not have been spent more wisely in new machines and equipment. Soon after the incorporation of the trust in 1898, it was charged before the Joint High Commission for the adjustment of questions between the United States and Canada that the machines of the company were antiquated.¹ Inasmuch as only one "news" machine has been added (making a total of 67),² it would seem that by 1908 the charge had received ten annual increments of truth. If the object of the trust has been to secure as much wood as possible from Canada³ in order to enhance the value of its land in this country owing to the diminishing supply, its policy in this particular has been shrewd.

But in competition with newly organized companies that avail themselves of the latest machinery, the International has found itself at some disadvantage; and the water sites for new concerns are still so numerous and the forest area so extensive that it can never again hope to maintain a monopoly of the industry as it expected to do in 1898. Nevertheless its share of the total production in the East (*i.e.*, New York and New England) is so large that it virtually dominates the market, and its representative has admitted that "possibly in a sentimental and moral way" ⁴

¹ Report of the Industrial Commission, vol. 13, p. 415.

² Hearings, p. 1072.

³ *Ibid.*, p. 1029.

⁴ *Ibid.*, p. 1182.

it is in a position to control the price of print paper in the United States.¹

What the International Paper Company tried to do in the East, the General Paper Company attempted in the middle western states. This company, with headquarters in Chicago, was organized in 1904 as a selling agency for 23 mills, and until an injunction was obtained against it by the Federal government,² seemed to control the western situation, altho there is no positive evidence to show collusion with its eastern rival. The traffic agent of that combination was still employed in 1908 jointly by several of the former members of the company,³ and it is believed by many that there is enough harmony of operation to constitute a violation of the Sherman anti-trust act.

Whether or not there is actual restraint of trade, it must be said that, tho competition is often visible, there likewise comes to light evidence of combination or "coöperation." Social-business meetings have been remarkably frequent, and there is extreme friendliness among the manufacturers. Not only do all report their monthly production to the American Pulp and Paper Association, but there is in several instances a curious interlocking of interests. Action by the Federal government has resulted in the con-

¹ The control of a large part of the output seems to be concentrated in a very few hands. Out of a total daily production of perhaps 4,200 tons, the following amounts are attributed to individual mills:—

International Paper Co.....	1,476 tons
Great Northern Paper Co. (Maine)	450 "
Berlin Mills (N. H.)	225 "
W. H. Parsons Co. (Maine).....	140 "
Selling Agency in New York	500 "

Western "interests" formerly connected with General Paper Co.	700 "
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² Hearings, p. 1778.

³ Ibid., pp. 1679-1683.

viction of the members of the "boxboard"¹ and "fibre and manila" (or wrapping paper)² pools, and it would not be astounding were it to be discovered that a similar pool exists among the manufacturers of news-print paper. The conviction of the Continental Paper Bag Company for participation in the wrapping paper combination only a month after the Manager of Sales of its controlling company (the news paper "trust") had stoutly maintained under oath that the trust was in no way interested in any pool, either directly or indirectly,³ leads one to doubt protestations of innocence, and to believe that this statement in particular was, to say the least, a perversion of the truth.

III. THE TARIFF

The formation of the trust so soon after the enactment of the protective tariff act of 1897 has not been overlooked by those who are prone to regard the tariff as the cause of all evil.

The act of 1897⁴ transformed the 15% *ad valorem* duties upon news paper, levied under the acts of 1890 and 1894, into a 15% duty with \$6.00 a ton as the minimum duty collectively. There was inserted a peculiar proviso which can be understood more easily after some discussion of the method of securing rights to cut timber in Canada.

The Parliament of Canada of course regulates the commercial relations of the Dominion, but the public lands in the eastern section are owned not by the Dominion but by the various provinces. These

¹ Paper Trade Journal, March 31, 1910.

² Cong. Record, 61st Cong., 1st Sess., vol. 44, p. 3468.

³ Hearings, p. 1175.

⁴ U. S. Statutes at large, vol. 30, p. 187.

provinces usually auction off the privilege to cut timber on the public or "crown" lands to the highest bidder at an "upset" price of about \$1.00 per acre, and in addition charge an annual ground rent of a cent an acre,¹ besides a stumpage tax collected when the wood is cut. Prior to May 1, 1910, the stumpage tax in the province of Quebec was sixty-five cents per cord, by which the province was able to derive a comfortable income. But if the wood was manufactured into pulp within the Dominion of Canada, twenty-five cents of the stumpage tax was refunded, leaving a net charge of forty cents per cord.²

A proviso was accordingly included in the Dingley Act that if any country or dependency (meaning the Canadian provinces) imposed an export tax on wood exported to the United States, there should be added to the duty on paper, \$2.00 per ton for every dollar of export tax so imposed. Our treasury department considered this stumpage tax of sixty-five cents equivalent to an export tax of twenty-five cents, and therefore collected $\frac{1}{4}$ of the provisional \$2.00, or fifty cents in addition to the regular duty of \$6.00. This additional fifty cents, however, was not collected upon paper manufactured from wood cut upon land owned by private parties in Quebec, because tho the provinces can direct the disposition of wood cut from their own lands, they have no right to restrict the exportation of a citizen's private property, such power being vested in the Dominion Parliament.

The evident intention of the proviso in the Dingley Act was to induce the provinces to remove their discriminatory taxes upon the export of wood. Quebec refused to do so, however, and Ontario even went a

¹ It is now \$5.00 per square mile in Ontario and Quebec.

² Hearings, p. 2939.

step further and soon absolutely prohibited the exportation of wood cut from her crown lands — for which the Dingley act had failed to provide any penalty whatever. As a result, saw mills of Michigan that had been in the habit of rafting their logs across the lake were forced to move into Canadian territory.

During the early part of the year 1907, the price of news paper in this country suddenly rose to an extent that alarmed several publishers, and their agitation through editorial and news columns led to the appointment of a select committee of the House of Representatives to investigate the "conditions" in the industry. This committee recommended¹ that the duty be lowered, conditional, however, upon the cancellation by Quebec and Ontario of discriminations against the exportation of wood.

As finally passed, the Act of 1909 provided that the duty be \$3.75 per ton, but if any dependency prohibited the exportation of wood, an additional duty of \$2.00 was to be levied, making \$5.75 on paper imported from such province. If any province taxed the exportation of wood, paper entering therefrom was to pay the amount of the export tax in addition to the \$5.75. Our Treasury department has decided that 1.4 cords of wood are required for a ton of paper,² and therefore the addition in the case of paper from Quebec was 1.4 times twenty-five cents, or thirty-five cents. Hence the total duty (up to May 1, 1910) upon all print paper manufactured from wood cut upon crown lands (but not private lands) of Quebec was \$6.10.

Upon May 1, 1910, Quebec made the next move³ by prohibiting completely the exportation of wood

¹ Their report and hearings comprise over three thousand pages.

² Paper Trade Journal, September 2, 1909.

³ Ibid., April 28, 1910.

cut from her crown lands, as Ontario had done ten years before, so that at present writing there are but two rates in effect, — half of our imports of news paper entered, as cut upon private lands, with a duty of \$3.75 per ton, and the balance entered at \$5.75 per ton.¹ The victory, therefore, seems to rest with the provinces, for not only are they able to export part of their paper to us at the lower rate of \$3.75, but also to deny us the privilege of using wood from their vast areas of crown lands.

The following figures show the imports of news paper: —

IMPORTS OF NEWS PAPER INTO THE UNITED STATES²

Fiscal Year	Tons
1899	0
1900	85
1904	1,890
1907	8,733
1909	18,044
1910	43,388
1910 last six months	25,956

The imports of paper, tho they have steadily increased, formed but 4% of our total consumption in 1910.³ Since 1909 the imports have increased rapidly, but it is impossible to determine how largely the reduction in the tariff has been responsible, because a serious strike in all mills of the International Paper Company during the early part of 1910 may have necessitated the importation. It is the opinion of the writer, however, that if conditions remain as at present, increased importations may be expected in the future.

¹ Paper Trade Journal, November 10, 1910, p. 9.

² Reports of Department of Commerce and Labor.

³ Practically all of our imports of news paper come from Canada, possibly because freight on the European product is prohibitive.

The two kinds of pulp are such important constituents of news paper, that it will be necessary to state briefly the tariff rates. Under the Dingley Act, the duty upon mechanical pulp was \$1.67 per short ton, but \$1.92 in case the pulp was made from wood cut on Quebec's crown lands. In the act of 1909, mechanical pulp was admitted free if ground from wood cut on private lands; \$1.67 if ground from wood cut on the crown lands of a province prohibiting the exportation of pulp wood, and \$1.92 as before if subject to the export tax. The reader will readily excuse the collectors of revenue on our northern border for writing to Washington for full interpretation of these various provisions. In the case of chemical pulp, the duty was \$3.33 per ton under both acts, with provisos in case of discriminations.

All of our imports of mechanical pulp come from Canada; of our imports of unbleached chemical pulp, one-fourth comes from Canada, and the balance, especially the higher grades, is imported from Europe. The following table presents the figures of imports since 1899:—

IMPORTS OF PULP

Fiscal Year	Mechanical Pulp	Unbleached Chemical
	Tons	Tons
1899.....	24,000	7,000
1909.....	130,000	132,000
1910.....	160,000	187,000
1910 last six months.....	104,612	102,750

It is to be noticed that the imports of mechanical pulp since 1909 have been increasing with remarkable rapidity. Our imports form probably 16% of the domestic consumption of mechanical pulp and 15% of the chemical pulp consumption. Both the mechanical and chemical pulps are used also in making

book and other papers. At the present time one-half of the mechanical pulp enters free,¹ but the importations of both kinds of pulp are doubtless significant enough to raise the domestic price by the full extent of the duty.

Even tho half of the mechanical pulp enters free, the selling price delivered in this country would be the same for either portion. Therefore it is probable that those who do not pay the duty are really receiving a bonus. These Canadian pulp manufacturers who thus escape the duty, however, cannot permanently retain this advantage,² but will be forced by their own competition to transfer it to the private owners of woodland in Canada, who, in selling their wood can secure a higher price than do those who license the crown lands, because the licensees have a different commodity to sell. The owners of private land doubtless are not sorry to see the capital value of their timber land thus enhanced.³

An interesting phrase, fortunately of no actual effect, but potentially of far-reaching importance, was inserted in the Act of 1909 by the Conference Committee of the two houses of Congress. Under the provisions of Section 2, the maximum tariff of 25% *ad valorem* in addition to the minimum duties as previously described may be assessed against

¹ Imports of Mechanical Pulp:—

	Fiscal Year, 1910	Last 6 months, 1910
Free	80,000 tons	53,000 tons
Dutiable	80,000 "	51,000 "

² Otherwise their competitors using wood from crown land would begin purchasing private wood.

³ It is possible that such an enhancement is not of permanent duration, because whenever the time comes that the pulp imported into the United States is made entirely from this private land wood, our domestic price will tend to fall. All the pulp would then enter free. The license holders seem to obtain their wood from the provinces upon very easy terms, so it is quite conceivable that even now they meet the competition of the private owners and thereby forego a portion of that revenue which accrues because the province does not exact a maximum or "rack" rent.

any foreign country that prohibits, or imposes a duty upon, the exportation of any article in undue discrimination against the United States. This provision was undoubtedly levelled at the Canadian regulations as to wood from crown lands, and may be attributed to the influence of Senator Hale of the Conference Committee. Representative Mann, Chairman of the Select Committee that investigated the conditions in the paper industry, said in Congress:¹ "Among other things, it (the Conference Committee Bill) provides that the maximum tariff shall be imposed upon a foreign country if that country shall impose any export tax. That provision was not in the House Bill. It was not in the bill as it passed the Senate. The words 'or imposes no export duty' were inserted in Conference, and I believe were inserted at the suggestion of a few paper manufacturers in order to impose the maximum tariff upon paper coming from the Province of Quebec." It is not to be wondered at if the paper manufacturers through their associate and spokesman, Senator Hale, used their utmost efforts with the administration, to insist upon a strict construction of the provision. The existence of such a drastic clause in the tariff act, even tho it may not have been inserted clandestinely, reflects but scant credit upon the method of framing our tariff legislation. Fortunately, the President, probably influenced by the newspaper publishers in particular, and public opinion in general, decided that the Canadian restrictions were not an "undue" discrimination.

The immediate effect of the present tariff may be merely to increase the cost to the consumer by \$5.75

¹ Cong. Record, 61st Cong., vol. 44, part 5, p. 4722. See also texts of the bills in House Doc., vol. 4, pp. 288, 354, 429 (same session).

on each ton of paper; the less direct effect, however, is that the tariff permits and stimulates production in this country whereas it would more naturally take place in Canada. If the tariff were twice as high as at present, it is possible, but not probable, that the selling price of paper here would be the sum of the duty and freight, plus the Canadian cost of production, a price which would enable a profit to be derived from using American woodland that now cannot be used because of high freight charges upon the wood shipped to the mills. It is more probable, however, that under conditions of free importation of wood (as has always been the case in the past) even if the tariff on the finished product were increased tenfold, our selling price would be determined not by Canadian cost of manufacture, but largely by adding to *our* manufacturing cost, the expense of securing Canadian wood and delivering it to our mills. Of course, if these freight charges on pulp wood were enormously in excess of the freight charges upon the finished paper, then the tendency would be toward the importation of the Canadian paper as in the case of a very low duty. The selling price might then be figured as the sum of Canadian cost, freight, and our duty. Secondly, the tendency would be to utilize poorly located American woodland. As to what will, or what does, determine the proportion of American wood to Canadian wood used, it is unwise to hazard a guess.

One of the most important aspects of the situation, altho seldom seen in its full significance, is this item of freight charges upon the wood imported. Not only do we import almost one-fourth of our present consumption of pulp wood, but upon thousands of cords the transportation charges by rail amount to

a considerable fraction of the total cost of the delivered wood.¹ In some cases the freight charge is \$6.00 a cord, or two-fifths of the selling price. The paper ultimately made from this wood meets the competition of paper shipped by Canadian manufacturers, who, as time goes on, will gradually introduce improvements in use here, but not yet common in Canada. If these Canadian manufacturers are thus able to reduce their present manufacturing cost, our manufacturers will be stimulated to further economy. Not the least important of their efforts will be directed to bringing pressure to bear upon transportation companies for low rates upon the bulky raw material, pulp wood. It does seem absurd, other things being equal, to dump the waste of the manufacturing process into American rivers *after* it has been transported from Canada, instead of throwing it into Canadian rivers and shipping down but half the weight in finished product.

Indeed, the present conditions involve not only the shipment of pulp wood to mills in New York and Maine, but also shipment of paper from these mills to the large cities. Affidavits presented to Congress state that the freight charges upon portions of the wood are \$5 and \$6 per cord, whereas the selling price of the wood delivered varies from \$9 to \$15. Upon the finished paper, the freight from the mills to Boston and New York is between \$2 and \$3 per ton; if shipped from Canadian points, about \$4. Hence transportation charges upon the raw material and upon the finished product are at least one-fifth of the total charge which the publisher is called upon to defray. Often the traffic agent is compelled to grant

¹ See Hearings, pp. 1050-1, for rates on pulp wood.

a low rate upon the pulp wood because he thinks otherwise he would have no paper to transport; another line might get it if all the finished product were made in Canada; and the shipment of both paper and pulp wood appeals to him as an increase in the volume of traffic, and consequently a source of profit to his company. Yet just as decisively it seems to the writer to be, from the view point of the community at large, an uneconomical waste of effort.¹ The freight agent feels that the low rate may maintain the manufacturer in business, and if so, there will be a traffic in mill supplies, which, regarded as an additional increment of business for the railway, is pure gain. But he forgets that if the manufacturer were in some other business in which natural advantages are greater, there would be not only as much traffic in supplies, but higher rates could be charged on the raw materials for the other industry, than can be paid on the bulky pulp wood.

It must be admitted, in this connection, however, that if the tariff is abolished and competition becomes keener, there might be a still stronger pressure upon the railroads for lower rates on the raw wood, and the present condition might become somewhat accentuated. Likewise, it is probable, that as a larger area of Canadian timber land is drawn upon, there will appear in Canada the same practice of shipping wood to the Canadian mill and shipping paper thence to the consumer in the United States. But something will still be saved over the present method, because it will be less expensive to ship the pulp wood from the forest to the Canadian mill than from the same forest to the

¹ Hearings, p. 3123. Rates from Canadian points to our western cities are the same as from our eastern mills.

American mill still farther away.¹ And, too, if the reader will look at the map of eastern Canada, he will be impressed by the large number of long rivers flowing southward into the St. Lawrence that greatly facilitate the transportation of logs by water to the Canadian mills.²

However important may be the incidental effects of the tariff, it is fair to say in general that the duty upon news paper, in comparison with the ordinary protective duties, is, and has been, very low: 15% under the act of 1897, and in 1909 nominally but about 9%. The nominal rate of \$3.75 (or about 9%), however, now applies to but half the imports of news paper. Indeed, unless the Canadian provinces can be persuaded, or intimidated, into removing their prohibitions upon the exportation of wood, \$5.75 will tend more and more to become the usual duty, owing to the eventual diminution of the wood yield from the timber lands in Canada owned by private citizens.

But even if the tariff raises our domestic price above the Canadian price to the full extent of the duty, the total tribute paid by the consumers of news paper is not greater than \$5.75 multiplied by the number of tons annually consumed (1,100,000) or roughly about \$6,000,000. Moreover, were it not for the fact that our paper companies are the owners of extensive tracts of timber land, it might even be said that the duties upon the two kinds of pulp reduce the net protection to the manufacturer by at least one-third of the \$5.75. Assuming that altho

¹ Under the latter system, of course, there is a saving in the transportation of the finished paper, but this is less than the extra cost of shipping the wood.

² A mill at Ottawa receives logs floated from a point 400 miles upstream.

part of the mechanical pulp enters free, the selling price of the whole supply is raised by the full duty of \$1.67, then the duties upon the chief constituents of news paper may be figured as follows:—

‡ ton chemical pulp at \$3.33 per ton	\$0.66
‡ ton mechanical pulp at \$1.67 per ton	1.33
	<hr/>
	\$2.00

For all those manufacturers who use imported pulps, these duties enter as a part of cost of production, and are not a source of profits, so that the excess in price of paper due to the tariff and paid by the consumer goes partly to the government in duties, and partly, as already pointed out, to the private owners of Canadian timber land because these owners possess an advantage over neighbors who license crown lands.

In general, too, it must be emphasized that the industry is not in a state of normal equilibrium either here or in Canada. It is not so here, because the perplexing uncertainty of legislation and of future wood supply makes investors wary in constructing new mills that might more profitably be located nearer Canadian forests. It is not so in Canada, because the meager development of the industry has not allowed time to determine whether the best location is in Quebec or in the more remote regions of Labrador and Newfoundland.

Except with regard to wood supply, it seems to be the fact that the manufacturing conditions in Canada conform very closely to those in the United States. The figures given in the report of the Tariff Board indicate that there is no great difference in labor cost *per ton* of finished paper:—

AVERAGE COST OF PRODUCTION OF NEWSPRINT PAPER

	United States	Canada
Labor cost.....	\$6.29 per ton ²	\$5.63
Cost of wood	14.32 " "	8.73
Total cost ¹	32.88 " "	27.53

It will be seen that in either country the labor cost is not of paramount importance, and that the advantage of Canada lies in its cheaper wood, or rather in the fact that freight charges upon that wood are negligible. Skilled laborers in Canada are paid high wages, and some of them are former Americans whom only higher wages could induce to cross the border. Unskilled laborers, perhaps, are paid smaller wages than in this country, but they are seemingly less efficient. The wearisome reiterated statements of manufacturers concerning wages paid by our northern competitors lose their force entirely when we observe cost of labor per unit of output. When considered in conjunction with trade journal reports of the lax methods of the Canadian mills, these statements ring very hollow. So far as alterations take place in general prices, in standards of living, or in labor conditions generally, it is likely that Canadian manufacturers will be affected in the same way and in approximately the same degree as the American producers.

To conclude this phase of the discussion of the past effect of the tariff, the writer believes that until 1904 or 1905 the tariff did not raise the selling price

¹ Not including depreciation or interest on investment.

² The figure \$6.29 is obtained by adding to the labor cost in the paper mill (\$3.37) the cost of the labor performed in the manufacture of ground wood pulp and sulphite pulp. The American cost of the ground wood used in a ton of paper is given as \$13.37, which is the cost of 90.9% of a ton at the average cost of \$14.59 per ton of ground wood. This is considerably more than the 80% of a ton usually calculated, but as the proportion in Canada is 88.8%, the discrepancy does not seriously impair the value of the table. Tariff Board Report, p. 39.

of paper to any noticeable extent, for it is then that the prices of American spruce display a marked upward tendency.

IV. CONSERVATION

But even if it could be demonstrated that there is no economic waste in the shipment of a weight of pulp wood from Canada double the weight of the finished product, even though the labor and operating cost of manufacturing were higher in Canada than in this country, and even if the tariff were to exact no tribute whatever from consumers, there is one consideration of so great portent to our future industrial welfare as to outweigh all others and stamp the duty upon paper as distinctly unwise and harmful.

In the matter of wood supply, we are at a serious disadvantage. We are suffering the consequences of a past and present wanton destruction of forests that is in striking contrast with the saner policy of European countries, or with the more prudent attitude of Canada. There was a time when our forests were described as inexhaustible, and we have continued to act on that assumption long after we have realized its falsity. If the present consumption of spruce in the East and North (3,750,000 cords for lumber and 1,500,000 cords for pulp) is maintained for but twenty years, the entire supply will be destroyed.¹ It requires 75 years, however, to grow a good-sized spruce forest from the seed and at the present rate of consumption we shall soon find ourselves with no supply of our own, and moreover probably debarred from Canadian tracts. With our timber area decreasing rapidly, it is by no

¹ Circular 166 of the Forest Service, 1909, p. 9. See also p. 22 and p. 72 of Forest Products No. 10, 1908, entitled Forest Products of the United States, 1908.

means strange that we have turned in the past to Canadian sources. As has already been noted, the importations of pulp wood (almost entirely spruce) are now about one-fourth of our total consumption. The following figures show the situation.

	Importations of Pulp Wood	Total Consumption
1899	368,000 cords ¹	1,956,310 cords
1909	907,000 "	4,002,000 ² "
1910	931,000 "	

The above figures, indicating the actual practice for years past of importing wood, are perhaps the most effectual refutation of the statement made with such brazen disregard for accuracy that we have "enough" wood of our own. It is true that the forest area of New York, New Hampshire, Maine, and Vermont is estimated at 32,900,000 acres,³ of which the paper companies own at least 2,500,000 acres; it is true that this area might yield four million cords annually if only the annual growth were cut. But it is just as unerringly true that if more than the annual growth is cut, the total area eventually will be diminished. The quantity of output may be the same whether only the annual growth of a large region is cut or a small area is stripped bare of all its timber. The blame attaching to our past conduct lies not in the practice of cutting a quantity unnecessarily large, but in this manner of "cutting clean" — of devastating an area of its entire stand of timber.

Of even greater importance than the destruction of forests may be the loss entailed through abnormal variations of the volume of water in our swift-flowing

¹ Census Bulletin No. 80, p. 12.

² Circular issued October 18, 1910, Bureau of the Census Department of Commerce and Labor.

³ Circular No. 106, Forest Service.

ivers. Probably all readers are familiar with the recent literature upon the subject. Therefore it is sufficient for the present purpose merely to remark that the denuding of hillsides leads eventually to summer droughts and spring floods, many of which seriously affect the water that drives the wheels of factories scores of miles down the river. Surely a section of our "protective" tariff that conduces to such a result merits the heartiest condemnation.

Many defenders of the paper industry resent the charge that they waste resources, and allude to the fact that the paper industry consumes but 2% of the total lumber output of the country. In comparison with the total cut of all kinds of lumber, the amount of spruce cut for pulp wood is insignificant. But there is an enormous amount of lumbering in the west and south which has little bearing upon the price of paper, or upon the devastation of the lands in those states where paper is chiefly made. In the paper producing states, almost half of the spruce cut is used for pulp wood, and altho there has been a decrease since 1899 in the amount of spruce cut for lumber, it has been almost offset by the increase in the amount used for pulp.¹ The following are the detailed figures:—

SPRUCE CUT IN PAPER PRODUCING STATES¹
(New York, Maine, Vermont, New Hampshire, and Lake States)

	For Lumber	For Pulp Wood
1899.....	2,250,000 cords	900,000 cords
1908.....	1,700,000 "	1,300,000 "

Moreover, the paper industry makes use of smaller and younger trees that the lumbering industry is generous enough to spare.

¹ For figures of 1908: Forest Products No. 10, pp. 22, 72. For figures of 1899, see Census of 1900, volume on Manufactures, part 3, pp. 833-835, 842-843, 1030-1.

In further defence of the paper industry, representatives have pointed out that the industry is using lumber refuse, and odds and ends that would be burned were it not for the production of pulp. So much is true. It is true, also, that there are many opportunities to combine large lumber and pulp mills and thus to save odds and ends. But it must not be forgotten that even though the tariff be removed, those American mills that utilize lumber refuse doubtless could still survive because of their advantage over Canadian mills in nearness to American markets.

Altho censurable from the public point of view, the "clean cutting" of an entire area is the inevitable consequence of the desire for gain upon the part of the individual woodland owner. He trusts to the altruism of "the other fellow" and merely looks askance at the depletion of the supply. There is, to be sure, some conflict of interest. Taxes on his investment and the danger of a forest fire incite him to cut all his wood at once. On the other hand, the certain rise in price in the future if all other owners so cut their wood, leads him to hold his wood for a profit. Now it seems probable from the large importations of wood and from the extensive area of timber land still remaining in the United States, that the expected rise in price has acted powerfully enough in the past to deter the paper companies from cutting all their wood at once.¹ But when once the reluctance of the

¹ The following figures may be of interest :

	Valuation of Pulp Wood Imports	Quantity
1906.....	\$4.43 per cord	322,758 cords
1907.....	4.84 " "	327,069 "
1908.....	5.79 " "	310,256 "
1909.....	6.18 " "	307,963 "
1910.....	6.55 " "	331,731 "

domestic owner to cut this wood is overcome, he usually strips the entire region;¹ this reduces the area which will yield next year's supply, increases the desire of others to hold for a rise in price, and compels increased importations from Canada.

The more accurate statement of this pressure upon the supply of wood is that the annual consumption exceeds the annual reproduction of the available forests. Virgin forests do not increase in their stand of timber; the mature trees die, rot, and are replaced. If the virgin areas are not cut, the annual growth, the present annual rot, so to speak, is forever lost. If, however, these forests were cut periodically of their largest trees (those that monopolize light and moisture), the annual growth after cutting would actually exceed the present amount of reproduction under natural conditions. Indeed, the Forestry Department recommends the selective cultivation of spruce because of three prominent characteristics of the tree: "its successful reproduction and seedling growth under shade, its tolerance and *ability to recover from long suppression*, and the presence of trees of all ages in typical spruce forests."² The success of European countries in reforestation under scientific methods leads one to believe that the value of this additional growth might exceed the cost of frequent cutting, and the further, though negative, advantage of not destroying valuable water powers points to prompt action and permanent control by the national government as a policy worthy of support by all far-sighted citizens.

Will not the recent prohibition of Quebec intensify the drain on our forests? We shall be debarred from

¹ There are occasional exceptions.

² Forestry Silvical Leaflets, No. 15, White Spruce.

the use of 150,000 cords heretofore secured from her crown lands.¹ To meet the demand for wood, the private owners may raise their price and thus hasten not only the extinction of their own supply, but also hasten the time when resort must be had to the crown lands. From the following table, it will be seen that the private lands are but a small fraction of Quebec's total forest area.²

FOREST AREA OF QUEBEC³

Held by private parties	5,000,000 acres	
Crown lands, unlicensed	80,000,000	"
Crown lands, licensed	45,000,000	" of which at least 3,000,000 are held by American companies.

An effect by no means incidental to this prohibition and consequent rise in price will be the utilization of timber lands in the United States located too unsuitably for profitable operation under the present conditions, and also the more intensive operation of lands already in use. In economic phraseology, our "margin of cutting" will be lowered.

V. CONCLUSIONS AS TO THE TARIFF

Perhaps it will be clear, after this discussion, that those American plants owning tracts of timber in the immediate vicinity of the mill have an advantage over any neighboring mills that are forced to im-

¹ Paper Trade Journal, November 3, 1910, p. 8.

² It is by no means improbable that a conflict will arise between settlers who desire further alienation of the crown domains, and the manufacturing interests that desire to encourage the growth of the paper industry there, by preventing further exportation of wood to the United States.

³ Hearings, pp. 2886-7. These are the figures of the forester to the department of crown lands in Quebec, but are mere estimates because as yet there has been made no reliable survey.

port wood from Canada and pay a transportation charge of \$3 or \$4 per cord.¹ This extra profit is substantially an economic rent accruing to the paper company in its capacity as a woodland owner, and the manufacturer who owns no wood will pay to any owner the same price as for the Canadian material upon which the freight charges are incurred.

These mills of ours that are well located with regard to market and to wood will not be exterminated upon the abolition of the tariff upon news paper, except under the following condition. If the market is opened to Canadians, our manufacturers can compete only if they produce their pulp at a price low enough to yield a profit. To do this, they must secure spruce at correspondingly low prices. But the general demand for spruce as lumber may be so strong that buyers of lumber can bid more for the spruce than can the manufacturers who desire to use it in making pulp. In that event even our best mills would be unable to meet the competition of Canadian mills that have but slight transportation charges to pay upon their wood, and eventually must be dismantled or replaced by lumber mills. The abolition of the duty upon paper will merely transfer to the consumer, in the form of a lower price for paper, the tribute which he now pays directly to the paper company, indirectly to the woodland owners as an economic rent — a rent which is possible only because of the waste resulting from the double transportation of the finished product and the pulp wood from Canada as raw material for a portion of that finished product, instead of transporting but half as much of the finished product.

¹ It is possible that mills fortunate as to wood supply have disadvantages in other respects that tend to cancel this particular situation rent.

Quite contrary to the stand adopted continually by the manufacturers in their briefs presented to Congress, the writer holds that the abolition of the tariff will not compel the more speedy destruction of our forests in order to meet Canadian competition. The free admission of paper may mean not even any diminution whatever in the capital value of timber land, for the spruce now used for pulp wood may be used for lumber. Even if a part of the capital value were destroyed, no owner would hasten on that account to destroy the whole forest merely because it yielded less income than previously. Indeed, when the tariff is abolished, *less* wood will be cut than at present, because the wood now shipped from remote locations in the United States will not be able then to sell (as pulp wood) at a profit.

It is of course in the nature of things that some wood in Canada will be secured at a greater distance from the mills on good water sites than other wood, and the phenomenon of situation rent will appear in Canada to a more marked degree as their production increases and a larger area of woodland is forced into use. In order to compensate for the poor location of the far northern timber limits, the provinces auction them off at a lower original "upset" price, even tho the stumpage tax is the same in all cases.

Predictions are seldom useful, and in this case they are especially hazardous, for such contingencies as the discovery of a more economical process of treating lumber refuse, or of an entirely new raw material, or far-reaching alterations in rates of transportation may revolutionize the present methods and upset all calculations based upon existing conditions. Nevertheless, the writer ventures to state his belief that so long as spruce is not supplanted by other woods, and

even tho the tariff is maintained, our unsuitably located mills will gradually be driven from the field by Canadian mills. It is extremely doubtful, however, whether Canada even now could produce more cheaply than the majority of our best mills were it not for the expensive transportation of pulp wood from Canada. At least there is almost no doubt that if, by afforestation, there could be recreated in the vicinity of our manufactories, a large supply of pulp wood, we could retain the industry because of natural advantages over Canada in nearness to market and in the purchase of machinery and miscellaneous supplies. Competition for water powers in Canada or compliance with demands for higher wages may seriously increase operating expenses of Canadian manufacturers, offset only partially, perhaps, by the general improvements arising from the expansion of the industry. But theirs is a distinct advantage in nearness to the wood areas. American capital is already extensively invested in Canadian water sites and woodlands, and the day may be not far distant when the same manufacturers who now, as American citizens, advocate the tariff in their anxiety to protect American laborers, will clamor just as loudly, as investors in Canada, for the abolition of the tariff. Then there may arise, conceivably, an "All American" paper monopoly.

ROSCOE R. HESS.

THE GERMAN IMPERIAL TAX ON THE UNEARNED INCREMENT

SUMMARY

Recent development of this form of taxation in Germany, 683. — The action of the Reichstag, 684. — The law of Feb. 14, 1911, 685. — Exemptions, 685. — Computation of unearned increment, 686. — Original cost and permanent improvements, 687. — Retroactive provisions, 689. — Additions allowed to cost of improvements, 693. — Allowance for change in purchasing power of money, 695. — Selling price and deductions therefrom, 695. — Tax rates, 696. — Summary illustration of working, 697. — Revenue divided among Empire, states, and cities, 700. — Treatment of existing taxes of the same kind, 704. — Administration, 706. — Probable revenue, 707. — Conclusion, 708.

IN an earlier issue of the *Quarterly* and elsewhere¹ may be found a discussion of the principles upon which the new German unearned increment taxes are based, together with some account of the forms these taxes have assumed in a few of the larger municipalities of that country. A brief statement regarding the subsequent development of the movement, culminating in the passage of an imperial law on the subject, February 14, 1911,² may be of interest at this time.

¹ R. Brunhuber on Taxation of the Unearned Increment in Germany, in this *Quarterly*, vol. xx, pp. 83-106 (Nov., 1907); also article by the present writer on The New Unearned Increment Taxes in Germany, *Yale Review*, vol. xvi, pp. 236-261 (Nov., 1907).

² The text of the law with a brief introduction is published in convenient form under the title *Zuwachsteuergesetz v. 14. Februar, 1911*, by Heymann, Berlin, 36 pp. A very useful commentary with the complete text of the law has been issued by Dr. Walter Boldt, Stadtrat in Dortmund, under the title: *Das Reichszuwachsteuergesetz v. 14. Februar, 1911, mit Anmerkungen, Erläuterungen und Beispielen für Steuerberechnungen*, also published by Heymann, 171 pp. Finally the administrative orders and forms (*Ausführungsbestimmungen*) for the execution of the law, officially issued March 27, 1911, have been reprinted by the same publisher in a pamphlet

A tax of this sort was introduced by the Naval Department of the German Imperial Government in Kiao Chau as early as 1898. First adopted at home by Cologne in 1905, the new tax promptly started upon a triumphal progress through the German municipalities. Before the end of 1907 it had been introduced by eleven cities, among which, besides Cologne, the more considerable were Dortmund, Essen, and Frankfurt-am-Main. Since that date the accessions have continued with increasing rapidity until by April 1, 1910, no fewer than 457 German cities and towns had adopted the unearned increment tax.¹ In Prussia alone 159 cities (*Städte*) and thirteen rural counties (*Landkreise*) had introduced it prior to 1910. As the new form of taxation found most favor in rapidly growing places of large or considerable population the true significance of the foregoing is greater than the bare figures might indicate. Of the Prussian cities and towns which had introduced the tax prior to April 1, 1910, twenty-seven had more than 100,000 inhabitants, seventy-two between 20,000 and 100,000, and sixty-four between 5,000 and 20,000. Berlin (2,018,279 pop.), after rejecting the new principle in 1907, finally accepted it in March, 1910. Nearly all the hustling suburbs of the metropolis had anticipated it in this action. Among other large cities not already mentioned which have introduced the unearned increment tax are Hamburg (874,878 pop.),

of 80 pages. Among other texts of earlier date which have been found useful are Justizrat Herman Kausen's *Die Reichswertsuwachsteuer*, Köln, Neubner, 1910, 155 pp.; Georg Haberland's *Die Wertsuwachsteuer*, Berlin, Unger, 1910, 60 pp.; and the *Protokoll d. Hannoverschen Städtetags*, Hannover, Jänecke, 1910, 69 pp., which contains the government's bill in its original form together with the changes made at its first and second readings.

¹ Of these 457 cities and towns, 301 were in Prussia, 77 in Saxony, 22 in Hesse, and the rest scattered throughout the other states of the German Empire. Cf. Boldt, p. 8.

Leipsic (503,672), Breslau (470,904), Kiel (163,772), and Wiesbaden (100,953). Altogether it is estimated that by April 1, 1910, the tax had been introduced into German cities and towns with an aggregate population of 15,000,000.

In 1909, the Reichstag devoted a great deal of attention to the reform of imperial finances. The possibility of employing the unearned increment tax as one of the means to this end was first seriously considered by the Imperial Diet in that year. Every party faction in the Reichstag expressed itself favorably upon the general principle involved,—a remarkable tribute to the impression made by the municipal experiments and also to the thoroness of the propaganda of the land reformers and economists on the subject. However, the Bundesrat postponed action on the ground that a thoro study of various kinds of real estate, and also of the interests of the municipalities which had already introduced the tax, should be made before a law on the subject could be properly drafted. Temporarily the place in the imperial budget to be occupied finally by an unearned increment tax was filled by a stamp tax (of $\frac{2}{3}$ of 1 %) on the selling price in real estate transactions, and the government was given until April 1, 1911, to bring in the proposed unearned increment tax.

Almost a year before the latter date, however, the imperial chancellor presented a bill on the subject to the Reichstag. The reason assigned for this prompt action was that it had become necessary to put an end to the uncertainty prevailing in the real estate market and among the municipalities of the country. After thoro consideration and numerous amendments the bill finally passed the Reichstag on

February 1st,¹ and received the imperial signature on February 14th of the present year. Formally the law went into effect on April 1st, but it contains retro-active features that will be discussed later.

As compared with the earlier municipal legislation on the subject the new imperial law is distinguished by its greater length and thoroughness. Hence any discussion of its text, even one so general as that attempted in the present article, must of necessity be somewhat detailed and mercilessly dry. Even so it must be understood that many of the following statements are subject to further qualification and definition. Those interested in the minutiae of the new law are referred to the accompanying translation of its text.

A small number of exemptions from the tax are allowed. The Empire itself, princes of the German states, the states themselves, and municipalities are on the free list. Associations for colonizing purposes, for the housing of the working classes, and similar semi-philanthropic purposes are also exempted, provided they limit themselves strictly to 4% interest annually upon their investments. A number of carefully defined transactions connected with inheritances, marriage settlements, and the redrawing of boundary lines among scattered strips of real estate are freed from the tax. Sales of whole parcels of real estate not to exceed 20,000 marks in value, or of unimproved real estate not to exceed 5,000 marks, are exempt, provided that the income of the seller and his wife in the preceding year did

¹ On final passage the bill was carried by a vote of 199 to 93, 20 members not voting. For the bill the Conservative, National-liberal, Economic-unionist, and Free Conservative parties voted almost solidly. A majority of the Centrum and a part of the Independent party also voted for it. The Social-democrats and a part of the Independent party voted against it, while the Poles abstained from voting.

not exceed 2,000 marks, and provided further that neither of them is engaged in the real estate business. Unearned increment taxes which amount to less than 20 marks are not collected.

The method of computing unearned increment is, of course, fundamental in all legislation of this sort. Three main items are involved. Stated in the simplest forms they are: (a) the price paid for the property at the last purchase; (b) the cost of permanent improvements since made upon it, and (c) the selling price. Roughly speaking, the unearned increment is the difference between the selling price and the other two items.

One of the hardest fights made in the Reichstag over the bill turned upon the point as to whether in calculating unearned increment the cost of permanent improvements should be subtracted from the selling price or added to the purchase price. In other words, using the notation indicated above, should increment be figured as $c - (a + b)$, or as $(c - b) - a$? Of course the gross amount of the result would be the same by either method. But, as will be shown later, the rate of tax is determined by the percentage of the unearned increment to the cost price *plus such additions to it as the law allows*. If, now, the value of permanent improvements made since the last purchase be added to the cost, the percentage of increment will be materially reduced, and consequently the tax rate.

Omitting everything except the three elements immediately concerned, the following illustration may serve to bring out the point clearly. A real estate operator buys a piece of unimproved property for (a) 5,000 marks, erects upon it a building worth (b) 80,000 marks, and sells the property for (c) 110,000 marks. Deducting the cost of permanent improve-

ments from the selling price (110,000 marks minus 80,000 marks), the result is 30,000 marks, and further subtracting from this the original cost of the land (30,000 marks minus 5,000 marks), the gross amount of the unearned increment is 25,000 marks. If, on the other hand, the cost of permanent improvements be added to the original cost of the land (80,000 marks plus 5,000 marks), and the sum, or 85,000 marks, be subtracted from the selling price of 110,000 marks, we obtain the same result, or 25,000 marks as the gross amount of the unearned increment. In the former case, however, the percentage of unearned increment is determined by the ratio of increment to cost price of the land alone, *i. e.* of 25,000 marks to 5,000 marks, or 500%. In the latter case the percentage is determined by the ratio of increment to the cost price of the land plus permanent improvements, *i. e.* of 25,000 marks to 85,000 marks, and the result is a percentage of increment of only 29.4%. Now a 500% of increment would be taxed at the maximum rate, 30%,¹—yielding under the illustration 7,500 marks to the public treasury. An increment of 29.4%, on the other hand, would be taxed at a rate of only 11%, yielding in the present instance only 2,750 marks.

Naturally the land-owning interest favored the latter method of computation. As originally drafted, however, the bill provided that the value of permanent improvements should be subtracted from the selling price instead of being added to the purchase price. A very large number of the more recent municipal ordinances had already introduced this method of computation. Tax reformers supported it on the ground that increments of value shown by real estate

¹ See table, p. 697.

transactions are due in the great majority of cases to the increase of pure land value, not to improvements. They pointed out, further, that the bill provided for the full, even generous, reckoning of the value of all permanent improvements at their first cost. It is one of the peculiar omissions of German unearned increment tax legislation that depreciation in the value of buildings and other improvements is not taken into account. As a consequence, improvements made early in a long period of ownership may be allowed to go to rack and ruin, and thus greatly depreciate its selling price. This, of course, might greatly reduce or even wipe out a considerable increment in the value of the naked land, with the consequence that the seller would escape the tax in part or altogether. To allow the land-owner thus to profit by depreciation while at the same time he added the full original value of improvements to the purchase price of his property was energetically protested against by the friends of the new tax. After a bitter fight, however, the land-owning interests succeeded in having the bill amended exactly as they wished,— the most important by far of a long series of concessions which they obtained from the Reichstag. Under the imperial law, therefore, cost of permanent improvements is added to, or rather merged with, the purchase price in calculating the percentage of unearned increment. As a consequence such percentages will be greatly reduced, and with them the tax rates. By this one change the annual revenue from the new tax will be reduced by many millions of marks.

To return to the three fundamental elements of unearned increment taxation, namely, (a) the price paid for the property at the last purchase, (b) cost of permanent improvements since made, and (c) the sell-

ing price. Additions allowed to the first two of these items, and deductions made from the third will, of course, reduce the amount of unearned increment. This much is obvious, but unless it is constantly kept in mind the bearing of the numerous and intricate qualifications which must now be dealt with will be utterly lost.

(a) *The Last Price paid for the Property.* In determining this item the price at which the property was purchased at its last transfer serves as a basis. Four per cent of this amount is added to cover the original costs of acquisition, including fees connected therewith. If it can be shown that the costs of acquiring the property were really higher, the larger amount will be added to the purchase price instead of the regular allowance of 4%.

The new imperial tax is frankly retroactive — indeed it is retroactive in three distinct ways. First, it reaches back to December 31, 1910,¹ three months prior to the date the law went into effect, to cover sales of real estate during this period. This was done, of course, to get hold of fictitious real estate transactions undertaken with the purpose of evasion. As it had been certain for a long time previous that the Empire intended to impose a tax of this character and as many cities were considering similar action it is believed that sales of this sort running into millions of marks have occurred throughout the country.

A second retroactive provision in the law is designed to get hold of other methods of evasion practised in the recent past and to prevent their employment in the future. All over Germany, whenever it has seemed

¹ In the first form of the bill this date was fixed at April 1, 1910, several days preceding the introduction of the bill into the Reichstag by the chancellor. The date was subsequently changed there never was a time during the consideration of the bill in the Reichstag when evasion by this method appeared possible.

likely that a city was about to enact an unearned increment tax, large owners of real estate have hastened to create corporations and have then transferred their property to these corporations at prices sufficiently high to anticipate any increase in its value for years to come. By this ingenious device they hoped not only to avoid any immediate imposition of the tax, but also to escape it permanently, since they could thereafter virtually transfer ownership by selling corporate stock instead of selling the property outright. During the first five months of 1907, when Berlin was considering an unearned increment tax ordinance, one hundred and seventy-four limited liability companies of this character were organized in that city. Rings were also formed in old established real estate corporations to buy up and then sell to the corporation desirable tracts which, it was thought, were thus brought under legal shelter from the impending tax. The imperial law reaches back six years, that is, to March 31, 1905, to cover such transactions. Instead of accepting the price at which the land was turned into the corporation it provides for an independent appraisal of its real value. The unearned increment is to be calculated from the value so determined, provided this value is 25% less than the price paid by the corporation and the circumstances show that an evasion of part of the tax was intended. Another section of the law places stock transactions of real estate corporations on the same basis with reference to the tax as direct transactions in real estate. By these provisions of the new law millions of marks of real estate values which owners had thought safely concealed will be brought under contribution.

Thirdly, and most important of its retroactive features, the new law reaches back for its basis in com-

puting unearned increment to the last sale of the property (with exceptions to be stated later) even if that sale occurred before the enactment of the present law. Moreover, it reaches much further back than most of the municipal ordinances already in existence. Cologne, for example, leaves all unearned increment which accrued prior to the passage of its ordinance entirely free; Magdeburg taxes increment accruing since April 1, 1904; Duisburg, since January 1, 1900; Berlin and Breslau, since January 1, 1895; and Hanover, since April 1, 1885. Dortmund goes back to the last exchange, but if this occurred prior to January 1, 1860, a fixed tariff of land values is assumed instead. Hamburg goes back to the last sale without limit of time.

The corresponding retroactive feature of the imperial law is not so severe as in some of the municipal ordinances, but still it is fairly stringent. In computing unearned increment the price paid at the last sale shall be taken as the cost basis or purchase price, if this sale occurred since January 1, 1885. If it occurred prior to this date, an appraised valuation of the property as it stood on January 1, 1885, is assumed in calculating unearned increment, unless the present seller can show that he or his predecessors actually paid more for the property, in which case the latter sum is taken as cost basis instead of the appraised valuation. The first of January, 1885, will remain basic in this way until 1925, when the tax gatherer will be reaching back a full forty years in computing increment on properties which are changing hands for the first time since 1885. After 1925, when properties are sold that have not changed hands for more than forty years, an appraised valuation of the property as it stood forty years before the date of sale will

be taken as the cost basis in computing unearned increment, unless the seller can show that he or his predecessors actually paid more than the appraised valuation, in which case the higher actual purchase price will be used as a basis.

Various criticisms have been made against this complicated arrangement. Even for the present it will not be easy to fix a satisfactory estimate of the values of many pieces of property as they stood in 1885. Between tax payers and tax officials frequent differences of opinion are sure to occur and be taken to the courts. To reach back a full forty years in making such estimates will be an even more ticklish and contentious matter. After 1925, moreover, the tax officials will no longer be looking back to a single fixed date but to a series of dates forty years earlier than each transaction involving this application of the rule and advancing constantly as time goes on. From the point of view of tax technique, therefore, this provision of the law is likely to prove troublesome.

Gratified as they were at the determination of the imperial authorities to make the law strongly retroactive, many tax reformers nevertheless objected to the cumbrous form given this part of the measure. Some of them boldly proposed to fix the basic date permanently at January 1, 1871. The Empire was founded about that time and special records of land values which could be referred to were made then. Moreover, even in the cities real estate values had not then begun to make the mighty strides which have so increased rents, and in the end called forth the whole movement for the taxation of unearned increment. Between 1871 and 1885, on the other hand, Germany's economic development was very rapid, there was much wild speculation, and in the larger cities, at least,

real estate values advanced considerably. By limiting the retroactive effect of the law to the year 1885 much of this increment will escape taxation. On the other hand, the real estate interests in the Reichstag of course bitterly fought both the temporary limit to 1885 and the later permanent limit of forty years. While the dates were finally fixed as stated, important concessions, to be noted later, were secured by the land-owning interests in other parts of the law.

(b) *Cost of Permanent Improvements.* It will be recalled that under the imperial law the cost of permanent improvements is to be added to, or rather merged in, the purchase price in computing unearned increment. What then are to be included under permanent improvements?

Theoretically expenditures for repairs and generally for the purpose of maintaining a property in its original condition are not so included. Depreciation, as we have seen, is not considered in any way. But sums spent since the last purchase of the property, or since the date at which its value was fixed under the terms of the law, for building, rebuilding, and for other special permanent improvements, form the basis of this item. Five per cent of the total amount so expended is added to cover the owner's trouble in directing the making of the improvements. If the owner is engaged in the building industry and has himself undertaken the making of the improvements 15 instead of 5% may be added to their actual cost on this score.

Next to be added to this general item are the costs of street improvements, sewerage, and other similar public improvements to which the property owner contributed, plus 4% annually thereon from the time such contributions were made until the property is

sold, not, however, to exceed a period of fifteen years.

Finally, an extremely complicated item is added, based both upon the original purchase price and the permanent improvements just considered. If taken together they show the property to have cost less than 100 marks an are (\$964 per acre), or three times as much in the case of vineyard land, an amount equal to $2\frac{1}{2}\%$ per annum from the time of purchase in the case of purchase price, and from the time of making improvements in their case, shall be added. In the case of land which on the same basis represents a higher value per are, there shall be added on such excess, if unimproved, 2% per annum; if improved, $1\frac{1}{2}\%$. If the period of ownership has been less than five years and the land has remained unimproved, these additions are reduced one half.

This extremely awkward double-barrelled provision of the law is designed to accomplish various ends. In the first place it favors agricultural land with a high percentage, because increase in the value of such land in Germany is frequently due largely to the unremitting labor of peasant owners. Particularly is this true of vineyard lands; hence the special clause bringing them under the $2\frac{1}{2}\%$ rate up to a value of 300 marks per are (\$2,892 per acre). The lower additional rates allowed on the value of land and improvements above 100 marks per are are designed to let the tax burden fall more heavily on real estate that has ceased to be used agriculturally and is either built upon or ripe for such uses. Last, this whole provision is designed to meet objections urged against the strong retroactive feature of the law. During a period ranging from twenty-six up to a maximum of forty years the monetary standard of value can de-

cline very materially in purchasing power. Relative to a higher general range of prices a large apparent increase in land values may be real only in part or even totally deceptive. Without some safeguard, therefore, sellers of real property who for a long time owned and occupied it ran the risk of being heavily taxed on an alleged increment which, considering a higher general range of prices, really did not exist. Hence the allowance of a small steady annual rate of interest upon purchase price and improvement costs.

While admitting the justice of this reasoning in general, tax reformers objected to the actual arrangement made in the law on the ground that it unduly favored the "millionaire peasant" type, familiar in the neighborhood of large German cities. It would be no less favorable, they complained, to that class of land speculators whose practice it is to acquire at little more than agricultural prices large tracts some distance out from the edge of cities and then to hold them for long periods until they are demanded at high prices for building purposes. So far as account is taken in this paragraph of changes in the purchasing power of money it would also appear that while the state has sought to protect the property owner against the consequences of a depreciating standard of value and higher general prices, it has not in any way safeguarded itself against the consequences of an appreciating standard of value and lower general prices. During periods of the latter character unearned increment taxes are not likely to be very productive.

(c) *The Selling Price.* From the selling price, — the third element of importance in computing unearned increment, — are to be deducted the costs of the transaction incurred by the seller, including fees. Further, if the seller can show that he failed to realize an an-

nual income of 3% on the cost of the property plus improvements, the amount by which he fell short of this income for any period not exceeding fifteen consecutive years may be deducted from the selling price. The enormous advantage which this provision gives to the speculator who holds unimproved land for long periods is apparent. In connection with the additions allowed to the purchase price it enables him to escape taxation altogether for at least fifteen years unless his increment grows at a rate faster than 4% or 5% a year.

Having thus defined the elements upon which the determination of the unearned increment depends, the law next fixes the rates of taxation upon a progressive scale. The rates are based on the percentage of unearned increment to the purchase price of the property plus the cost of permanent improvements and the various additions allowed thereto. Beginning at an increase of value of 10% or less, the tax rate is fixed at 10% of the increment. The tax rate increases 1% for each additional 20% of increment until it reaches a rate of 19% on increments of from 170 to 190%. Beyond this point the tax rate increases 1% for each 10% additional of increase of value until it reaches a maximum rate of 30%, which is imposed on all gains of 290% and over. However, the taxes levied under these rates are subject to a deduction of 1% of their amount for each completed year since the last sale of the property. If the last sale occurred prior to January 1, 1900, this reduction shall be computed at the rate of $1\frac{1}{2}\%$ annually for the period up to January 1, 1911. In order to present a clear picture of the tax rate provisions of the law the following table has been prepared. It shows the basic tax rate for the

various percentages of unearned increment, and also the rates as they will be reduced, under the provision just mentioned, after ten, twenty, and thirty years of possession.

TABLE SHOWING RATE OF TAX ACCORDING TO PERCENTAGE
OF UNEARNED INCREMENT AND LENGTH OF
POSSESSION UP TO 30 YEARS¹

Percentage of increase of value to cost price plus value of permanent improvements, etc.	Tax rate	Tax rate after 10 years of ownership	Tax rate after 20 years of ownership	Tax rate after 30 years of ownership
10% and less	10%	9.00%	8.00%	7.00%
over 10% and up to 30%	11	9.90	8.80	7.70
" 30 " " 50	12	10.80	9.60	8.40
" 50 " " 70	13	11.70	10.40	9.10
" 70 " " 90	14	12.60	11.20	9.80
" 90 " " 110	15	13.50	12.00	10.50
" 110 " " 130	16	14.40	12.80	11.20
" 130 " " 150	17	15.30	13.60	11.90
" 150 " " 170	18	16.20	14.40	12.60
" 170 " " 190	19	17.10	15.20	13.30
" 190 " " 200	20	18.00	16.00	14.00
" 200 " " 210	21	18.90	16.80	14.70
" 210 " " 220	22	19.80	17.60	15.40
" 220 " " 230	23	20.70	18.40	16.10
" 230 " " 240	24	21.60	19.20	16.80
" 240 " " 250	25	22.50	20.00	17.50
" 250 " " 260	26	23.40	20.80	18.20
" 260 " " 270	27	24.30	21.60	18.90
" 270 " " 280	28	25.20	22.40	19.60
" 280 " " 290	29	26.10	23.20	20.30
" 290	30	27.00	24.00	21.00

Comparing imperial rates with those fixed in municipal ordinances, it should first be stated that the new law does not exempt low percentages of unearned in-

¹ Adapted from Justizrat Hermann Kausen's *Die Reichswertsuwachsteuer*, p. 98, with changes made to conform to the final text of the act of February 14, 1911. Actually the deduction of 1% per annum is to be made from the gross amount of tax due under the basic rate, but the results would be exactly the same under a table such as the above.

crement taxation. In most of the local enactments increases of value of less than 10% were left free. If full value is admitted on all permanent improvements, as is certainly the case in the imperial law, it is hard to see why such exemptions should be allowed. To this position the government adhered in spite of the opposition of the landed interests.

As regards the scale of tax rates, ranging in the imperial law from 10 to 30%, the following list of the extremes in number of the more important local ordinances may be of interest.

<i>City</i>	<i>Tax Rate</i>	
	<i>Lowest</i>	<i>Highest</i>
Hamburg	1%	12½%
Dortmund	3	15
Essen	3	15
Frankfurt-am-Main	2	25
Berlin	5	20
Breslau	6	25
Cologne	10	25

Under municipal tax ordinances, however, the high rate of 25% is, as a rule, imposed upon unearned increments of about 150%, whereas under the imperial law a 25% rate is not reached until the increment amounts to 240 %. Moreover, owing to the addition of the value of permanent improvements to the purchase price, the higher percentages of unearned increment will seldom be attained under the imperial law. Finally, experience in various cities has shown that the highest percentages of unearned increment emerge only on long term property holdings. The reductions of the tax by 1% per annum will save such large percentages of increment from the higher rates. Thus a case of unearned increment amounting to 290%, accruing after thirty years' ownership, will pay at the rate of 21%

instead of at the maximum rate of 30% first fixed in the law.

By way of summary of the various provisions of the new law regarding computation of unearned increment and tax rates, a typical example may be of service.¹ Let us assume that on April 3, 1905, a piece of unimproved property with an area of 1.63 ares was bought for 3,939 marks. In 1906, a dwelling house was erected upon it, and the city made street improvements upon which the owner had to pay an assessment. The property was sold, February 5, 1911, for 35,000 marks. Omitting minor details, the computation of unearned increment would be as follows: Add to the purchase price of 3,939 marks (1) 4% to cover the costs of purchase including fees, or 158 marks; (2) the cost of the dwelling erected in 1906, which was, say, 20,000 marks; (3) 5% of the cost of this building to repay the owner for his work in directing the making of this improvement, or 1,000 marks; (4) the assessment of 1,000 marks paid by the owner for street improvements made by the city in the same year; (5) 4% thereon for the four full years elapsing between 1906 and the date of sale, or 160 marks; (6) the allowance of 2½% on the value of the property up to 100 marks per are for five full years amounting to 20 marks; (7) the allowance of 2% on the value in excess of this amount per are as long as the property remained unimproved, or one year, which makes 79 marks;² (8) the allowance of 1½% on this excess plus the expenditures for the dwelling (20,000 marks) and directing its erection (1,000 marks), from the time

¹ Adapted from Boldt, p. 156.

² From the purchase price, 3,939 marks, increased by costs of acquisition figured at 4%, or 158 marks, is subtracted 163 marks, the value of 1.63 ares at 100 marks per are, leaving 3,934 marks on which this allowance of 2% for one year is made.

this improvement was made until date of sale, or four years, making 1,496 marks.¹ The sum of these various items, or 27,852 marks, is the total cost of the property as determined under the imperial law. Next subtract from the selling price of 35,000 marks, the amount by which the owner fell short of a 3% income on his investment during the year the property remained unimproved, or 123 marks,² and the result, 34,877 marks, is the selling price of the property as determined under the imperial law. Legal selling price (34,877 marks), minus legal cost (27,852 marks), gives a gross unearned increment of 7,025 marks. The ratio of this amount to legal cost (7,025 to 27,852 marks) shows the percentage of increment to be 25.2; and, accordingly, the tax rate is 11%. Eleven per cent of the 7,025 marks, figured as the gross amount of the unearned increment, is 772.75 marks, but this must be reduced by 38.65 marks, which is 1% of the tax for the term of five years during which the property was in possession of the present seller. With this final deduction, therefore, the amount of tax actually to be collected on the transaction is 734.10 marks.

Next in interest to the provisions regarding the computation of unearned increment and tax rates, was the question of the division of the income from the tax among the Empire, the states, and the cities or other local government bodies. It will be recalled that the municipalities of Germany began the development of this form of taxation several years before the Empire entered the field. Strong pressure put upon them

¹ To the 3,934 marks figured in the preceding note is added the cost of building the dwelling plus the 5% allowed the landlord for directing the making of this improvement, and the sum, or 24,934 marks, is the basis for this allowance at the rate of 14% for four years.

² In this case, also, to the actual purchase price of 3,939 marks is added 4%, or 158 marks, to cover the costs of acquisition including fees.

from above forced them to this solution of their financial difficulties.¹ Naturally, therefore, they protested on every possible ground against any invasion of what they had come to look upon as their own bailiwick.² Legally and logically, however, the position of the cities was open to attack. Against the unquestioned constitutional right of the Empire to enter upon taxation of this character the cities could urge only their moral right based upon prescription. As a matter of logic, it was impossible for the cities to deny the right of the Empire, and, for that matter, the right of the state and other local government bodies as well, to participate in the revenue derived from the taxation of unearned increment. The use of the term "unearned" in this connection is subject to qualification. Primarily, of course, it means unearned by the landlord. We have already seen what pains were taken in the law to assure owners the benefit of every possible contribution made by them in the form either of investments or of labor. If anything remained after these deductions were fully and fairly made it was clearly not due to the exertions of the landlord, and, hence, so far as he was concerned, deserved to be called unearned. Now the cities declared their intention of taking by taxation a portion of such residual amounts on the ground that they were due to a considerable extent to the beneficent operations of municipal government. In other words part of the increment *unearned* by the landlord was clearly *earned* by the city. On exactly the same grounds, however, it cannot be denied that other parts of the increment unearned by the landlord were due

¹ See article by the present writer on Berlin's Tax Problem in the *Political Science Quarterly*, vol. xx, p. 666 (Dec., 1905); also *Yale Review*, vol. xvi, p. 242 (Nov., 1907).

² In addition to the general references cited in the note, p. 682, and especially the minutes of the Hanoverian *Städtetag*, consult the *Mitteilungen d. Zentralstelle d. deutschen Städtetags*, Band II, Nos. 19-20, p. 439.

to the beneficent operations of imperial, state, and local governments other than municipal. In the case of Berlin and the capital cities of the various states, of military and naval stations, of cities in which great public institutions with their administrative forces were located, the contributions of imperial and state governments to local land values were direct and undeniably very great. And even in other places the work of imperial and state governments in maintaining peace and order, furthering commerce abroad and at home, fostering manufacturing, agriculture, and other industries, and so on, must have contributed materially to the growth of land values.

Nearly all the representatives of city interests conceded the general validity of this argument. Unfortunately, it furnishes no quantitative basis for a just and universally applicable division of the revenue arising from a general unearned increment tax.

Indeed it is clear that the division of the increment unearned by the landlord into quotas assumed to be earned by imperial, state, and local governments respectively cannot justly be accomplished upon the same basis for all localities. If, nevertheless, some uniform rule had to be adopted, the advocates of city interests were quite certain that it should apportion by far the larger share of the revenue to the municipal governments. City governments, they held, were closer to the local property owner, and the services of such governments in providing or supervising public utilities, safeguarding public health, furnishing facilities for public amusements, and so on, contributed in the main much more directly and materially to the growth of land values than the services of state or imperial governments. A division of the revenue, giving two thirds to the cities and one third to the Empire, was

accepted as fair by some of the advocates of city interests.¹

Apart from the vital point as to their quota under the imperial law the interest of the cities was identical with that of the Empire, and opposed to that of the land-owning class. In other words, as partners in a common tax undertaking, both city and Empire desired as strong and productive a measure as possible. One other point, however, made by the advocates of municipal interests against the proposal of an imperial tax is of sufficient importance to deserve notice,—namely, that owing to the wide variations of conditions in different localities, and particularly as between city and country, no unearned increment tax legislation applicable uniformly over the Empire could be just. In proof of this assertion attention was called to the wide and numerous differences shown by a comparison between the various local ordinances enacted prior to 1911. It is impossible to deny a certain validity to this argument, and future amendments to the imperial law may have to take it into account. The differences discoverable in the earlier ordinances, however, are said to be due largely to the varying degrees of strength and tenacity with which the landlord interest fought them in municipal councils.

In favor of an imperial unearned increment law various arguments besides the general points already noted were made. One was that local property owners were often strong enough to cause the rejection or emasculation of unearned increment tax ordinances in city councils. Imperial legislation and administration, it was hoped, would be more free from this influence.

¹ See p. 150 of Stadtrat Boldt's earlier work on *Die Wertsuwachsteuer*, Dortmund, 1909. This suggestion assumed that the cities were to do the work of assessing and collecting the tax, and thus left the states out of account.

At one stroke unearned increment taxation would be introduced by an act of the Reichstag over the whole of the German Empire. While the latter point was well taken and of unquestioned weight, we have already seen that the landlord interest proved itself far from lacking in influence in the Imperial Diet. Finally the advocates of legislation by the Empire urged that the tax rates could readily be made high enough to insure those cities which already had ordinances of their own incomes as large as they were already enjoying from this source.

Let us turn from the arguments on this point to actual adjustment of imperial with local interests made by the law of February 14, 1911. The lion's share of the income from the new tax, 50% altogether, goes to the Empire; 10% of the amounts collected in their respective territories goes to the state governments as reimbursement for the costs of administering the law; and the remaining 40% is left to the municipalities or other local government corporations. Further, the state governments are given power to deal on their own account with this last 40%. The municipalities may, therefore, find themselves forced to stand for further reductions imposed upon them by the various state diets for the benefit of the counties (*Kreise*), provinces, or of the state itself. Some consolation may be derived by the cities from the fact that, with the consent of the supervisory authorities of the state, they may add local levies on their own account to the imperial tax rates, but these supplements (*Zuschläge*) will not be allowed to exceed in revenue producing power the amount due the city under the imperial law, *i.e.* 40% of the total amount collected. Further, the imperial and local rates taken together may in no case take more than 30% of the

unearned increment. With these limitations additional local rates may be variously fixed according to the different kinds of property involved and the length of the period during which it has been in the possession of the seller. Some room for local adjustment is thus allowed even under the terms of the imperial law. Indeed one of the arguments in defence of the low scale of tax rates provided by the imperial law was that the rates must be so fixed in order that cities desiring it would have room to add *Zuschläge* of considerable size on their own account. It is believed, however, that real estate interests will make it extremely hard for city councils to proceed far in this direction.

One further concession is made to those communities which, prior to April 1, 1909, passed an unearned increment tax ordinance to take effect before January 1, 1911, or in which prior to the latter date an ordinance had gone into operation with retroactive effect back to April 1, 1909. In case such communities can show that their average yearly income under their ordinances was in excess of the portion allotted to them under the imperial law, the difference is to be paid them out of the share of the Empire until April 1, 1915. Or instead of this a community, with the consent of the imperial chancellor, may retain its existing ordinance for the same period, paying over to the Empire, however, all income in excess of the average which it received from its own tax prior to April 1, 1911. It is left to the imperial federal council (*Bundesrat*), by the way, to determine what this average has been in given cases. So far no general method of computing such averages has been promulgated. Owing to the great diversity of municipal ordinances on the subject it will be a matter of great difficulty to do so, and

any solution is certain to cause friction between city and imperial officials. For the time being, therefore, the Bundesrat has decided to avoid general rules and to deal only with individual cases as they come up.

By these transition provisions of the new law those cities which anticipated the Empire in unearned increment taxation are guaranteed against any diminution of their income from this source during a period of four years. After 1915, however, all local legislation will be permanently superseded by the imperial law administered uniformly throughout the whole country. So far as the continuation of local ordinances is concerned a recent announcement by the imperial chancellor is of great interest.¹ For the present he has determined to grant permission to retain existing ordinances for periods of one year only. This will enable municipalities having their own ordinances to study results obtained under the imperial law in other cities. If the latter prove satisfactory, the uniformity contemplated by the law may be attained, with the full consent of the interested cities, earlier than 1915.

From an American point of view those aspects of the new imperial law which we have just been considering are interesting. They show the federal government of Germany reaching down to abrogate or rearrange in thoroughgoing fashion a detailed part of the tax systems of many municipalities and local governments scattered through its separate states. Under our constitutional system such interference by Washington in affairs of local taxation is, of course, quite out of the question.

In accordance with the usual German practice the actual administration of the new unearned increment tax is turned over to the various state govern-

¹ *Mitteilungen d. Zentralstelle d. deutschen Städtetags*, 10, Juni, 1911, p. 137.

ments, subject, however, to the supervision of the imperial plenipotentiaries for customs and taxes. Ample provision is made in the law for the hearing and decision of all complaints made by tax payers. Fines are provided for various offences. In the opinion of the German Municipal Conference the administrative provisions of the law are so unduly complicated that they will greatly increase the amount of work and the costs necessary to collect the tax, and will lead to much litigation.¹

Experience has shown that no prophecies are more apt to be misleading than those regarding the income to be yielded by an unearned increment tax. All the factors affecting the real estate market, including the perturbations and evasions caused by the impending tax itself, and all the complicated legal paraphernalia for the computation of unearned increment, play a part in the final result. Over a very wide field, such as that covered by the new imperial law, however, fluctuations in the many local real estate markets will perhaps tend to compensate each other. As to the probable income which the new tax may be expected to yield all cautious prophets are silent. Only one line of speculation may be suggested regarding this matter. In 1909, a stamp tax was placed in the imperial budget with the understanding that the unearned increment tax law should be worked out later and substituted for it. Now to enable the government to dispense with this stamp tax an annual income of at least 20,000,000 marks from the unearned increment tax would be necessary. And as the empire was to receive only half of the income from such a tax, a total

¹ Antrag d. Vorstandes d. deutschen Städtetags betr. Reichs-uwachsteuer v. 1. Nov., 1910. Mitteilungen d. Zentralstelle d. deutschen Städtetags v. 12. Dez., 1910, p. 489.

revenue of 40,000,000 marks (\$9,528,400.00) was to this extent indicated. Whether or not the government's original bill would have produced so much is highly problematical. But it is absolutely certain that the amendments made in the Reichstag enormously reduced the revenue producing power of the act. That the government shares this view is proved by the later action of the Reichstag which, upon the urgent representations of the imperial secretary of the treasury, postponed the substitution of the unearned increment for the stamp tax from 1911 to 1914.

In its main outlines, therefore, the new imperial law may be described as fairly strong in its retro-active features and weak elsewhere. Financially its present importance is very slight. In its extreme complexity the law is a true product of the German intellect. As experience is obtained in its administration and as decisions are handed down by the courts regarding its interpretation, the difficulties arising from this course may be greatly reduced. Still it remains a very vital question, particularly from the point of view of more democratic countries which may wish to follow Germany's example, as to how far the complexity of unearned increment taxation is inherent in the nature of the subject itself. As the law stands it is not satisfactory to the empire from the point of view of productivity, nor to the cities as regards their share of the income, nor to the real estate interests which, of course, are fundamentally opposed to all taxation of this sort. Between the three it is certain to be considerably amended soon after its effects become manifest. German land tax reformers are inclined to lament that the new law has "no teeth in it." A fairer statement would be that it has simply cut its milk teeth and may be expected to

develop mature molars and incisors later. Taking all things into consideration, however, the new imperial law is one of the largest and most significant practical applications of the single tax idea that has ever been attempted.

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TENANCY IN THE NORTH CENTRAL STATES

SUMMARY

The tenancy problem one of many phases, 710. — Characterization of the North Central States, 712. — Relation of tenancy to value of land, by states, 714. — The same by groups of counties, 717. — Influenced by size of farms, 719. — By type of farming, 720. — Tenancy and the corn belt, 723. — Extensive and intensive farming, 724. — Summary, 728.

FROM the standpoint of tenancy the United States is far too large and too varied to be treated as a unit. Any one of the recognized geographical divisions is so large and varied that even a statistical treatment of tenancy for one section is sure to leave out of account many local and minor influences which taken together may be of primary importance. It would be irrational to speak of tenancy in the abstract and include within the scope of the term the twenty-acre cotton farm of Georgia and the thousand-acre farm of North Dakota. In the former case the tenant is usually under the eye and the domination of the owner of the land; is in debt for equipment and dependent for subsistence; is in charge of one thousand dollars worth of property; and is himself the owner of but one or two hundred dollars worth. In the latter case the tenant is frequently as independent as the owner of the land; selects his crops to be planted; plans his field operations; owns his live stock and implements, free from incumbrance; buys and sells entirely at will; owns property worth from one to several thousand dollars; and is in charge of a farm worth perhaps twenty-five thousand dollars. Such is the contrast from north to south. Tho the contrast from east to

west is less pronounced, it is by no means negligible. In the East the farm is small by comparison; it no longer responds to cultivation alone; is not so well adapted to the use of draft animals and even less to the use of mechanical power; diversified farming, or highly specialized intensive farming, is the only types which can succeed. In the far West there is a great expanse of country, and the greatest diversity of soil and climate; a range of crops from the durum wheat and alfalfa of the plains to the irrigated gardens of the valleys. There is land worn out from the standpoint of present methods of farming, and land so rich that those farming it believe it will last forever. There are farms (so-called) of a quarter of a million acres, worth a dollar an acre; and farms of three acres worth three thousand dollars an acre. Moreover, in the western country many farms are just being taken from the government in the form of homestead, Carey Act entries, desert claims, and the like; great numbers are being sold on every conceivable plan of coöperative development and deferred payment, these latter being orchard enterprises as a rule. It is apparent that these conditions are not comparable either with the South, the East, or the middle West. It is no less apparent that the different units here are not comparable one with another. The conditions are so unstable and uncertain that it is difficult to describe the present situation, let alone discover the trend events are taking. It may, however, be noted by way of further introduction that there is a comparatively low percentage of tenancy in the East and in the far West; the highest percentage in the South; and, in the North, a high percentage in the middle West, or, in terms of the census, the North Central division of states.

The North Central division is a large block of country. It comprises twelve states, the smallest being Indiana, the largest, Minnesota. Taken together they have an area of over three-quarters of a million square miles, or 22 per cent of the area of continental United States. They have a population of almost thirty millions, or about a third of the total. From the agricultural point of view this section has striking features. Here are over one-third of all the farms and farm land of the country, valued at more than the remaining two-thirds. In connection with these farms are found nearly half of the cattle, 45 per cent of the horses, and, in value, almost half of the agricultural implements and machinery. Within this section there is grown two-thirds of the wheat crop of the whole country. Also seven-tenths of the corn crop, eight-tenths of the oats crop, and six-tenths of the hay and forage crop are grown in this division. In short, the great bulk of the bread stuffs and the meat, and no inconsiderable part of the dairy products and the fruit, come from these states.

The North Central division is often spoken of as a section uniform in character and quality; but such is far from the case. For example, the price of land in Illinois is reported at \$94.90 per acre, and in North Dakota at \$25.70, the other ten states ranging between these extremes. Even within a state there are great variations. For example, in Illinois and Iowa there is much land selling for more than \$200 an acre, while at the same time a whole county in Illinois is reported at \$17.00 per acre for land and buildings. Nebraska has land selling for \$150 in the eastern part of the state, while in the western part there are abundant examples of the economist's no-rent land. Moreover, both in Ohio and in North Dakota there is land

which has not been farmed at all. The topography, the nature of the soil, and the length of time it has been cultivated all help to determine the size of the farm, which in Ohio averages 89 acres, and in North Dakota 382 acres. The density of population is correspondingly unlike, ranging from 117 per square mile in Ohio down to 7.6 in South Dakota, while in parts of Ohio the density is several times the average for the state and in South Dakota it falls below one per square mile for some counties.

There is great diversity in the character of the soil and its primary condition. The greatest prairies of North America were in these states, and some of the best of the pine forests and extensive hardwood forests. The swamps are great in extent in the northern part, tho irrigation is essential to good crops in the western part. As a result the character of the farming varies very greatly. Certain states may be characterized by the leading type of agriculture within them. Ohio has long been known as a sheep-growing state, Illinois as a cereal-producing state, Wisconsin as a dairy state, Iowa as a cattle- and swine-producing state. Minnesota and the two Dakotas are known far and wide as the producers of wheat, barley, and flax; Michigan is noted for fruit, and sugar beets; and so through the list. It is not necessary, however, to go from one state to another to find changing conditions. There is much dissimilarity within any given state, and consequent variety in the agriculture. In Wisconsin, for example, there is the regular grain growing, — corn, oats, and barley; there are cattle for beef and for the dairy, there are sheep and swine; but in addition to these more ordinary kinds of farming, we find the tobacco farms, truck farms, and the so-called clover-seed farms, besides

land still to be made into farms. In Illinois the crop range is a wide one. Some parts of the state grow as much corn per square mile as is grown anywhere; some counties are outside the main corn belt. In parts of the state clover and timothy are found on almost every farm; in other parts these crops are almost unknown.

With all these conditions varying so widely it would be strange were tenancy a constant factor, and it is not. Indeed, it would hardly be possible for it to run through a wider range, since it now varies by individual counties from less than one per cent of all farms in some to eighty-three per cent in others. Over two-fifths of all land of the United States rented to tenant farmers is found in this group of twelve states, and these farms have a value greater than that of the other three-fifths of such farms.

VALUE OF LAND AND PER CENT OF TENANCY

	Value per acre	Per cent of tenancy	Rank in value	Rank in tenancy
Illinois.....	94.90	41.4	1	1
Iowa.....	83.00	37.8	2	3
Indiana.....	62.00	30.0	3	5
Ohio.....	53.30	28.4	4	7
Wisconsin.....	43.30	13.9	5	12
Nebraska.....	41.84	38.2	6	2
Missouri.....	41.76	29.9	7	6
Minnesota.....	37.00	21.0	8	9
Kansas.....	35.50	36.8	9	4
South Dakota.....	34.70	24.6	10	8
Michigan.....	32.00	16.0	11	10
North Dakota.....	25.70	14.3	12	11

The first fact to be noticed is the close parallelism between the value of land and the proportion of tenancy. The above table shows the value of land per acre,

and the per cent of tenancy, as reported in the Thirteenth Census, together with the rank in each.

It will be seen that the ranks in value and in tenancy correspond closely in about two-thirds of the states and differ materially in the other instances. Must it be inferred then that the case is a mere coincidence? Before dismissing it as such let us drop three states from the list and re-rank the remaining nine. Dropping Wisconsin, Kansas, and Nebraska, the result is that, in value and tenancy respectively, the ranking is as follows:—

RANK IN VALUE AND IN TENANCY, SELECTED
STATES

	Rank in value	Rank in tenancy
Illinois	1	1
Iowa	2	2
Indiana	3	3
Ohio	4	5
Missouri	5	4
Minnesota	6	7
South Dakota	7	6
Michigan	8	8
North Dakota	9	9

Surely, if this be a mere coincidence, it is a very striking one. But why drop Wisconsin, Kansas, and Nebraska? In partial answer it may be said that Wisconsin has always been remarkably low in tenancy, from causes which will be discussed later, and that Kansas and Nebraska have come up rapidly in tenancy, due to the unusual adaptability of their lands to extensive farming, and to the further fact that in them no considerable amount of available unoccupied land is left, to be taken by homeseekers and so for a time balance the tendency toward the purchase of land for speculation. Land held for speculation is

always for rent and the time has arrived in these states when tenants are plentiful enough to take the most of it. On the other hand, much land in Minnesota and the Dakotas goes begging for occupants; it must be worked by its owner or not at all, hence a very low rate of tenancy in the newer sections of these states, which holds the general average of tenancy down, in spite of a high rate in the older sections where speculators and tenants are both plentiful. It is in the older states that conditions are more uniform and apparently more stable, and it is in these states that values and tenancy seem unmistakably to be travelling the same road, and at a somewhat similar rate of speed.

The trend of tenancy for the group during the past thirty years is shown in the table: —

PER CENT OF TENANCY, 1880-1910

	1910	1900	1890	1880
Illinois	41.4	39.3	34.0	31.4
Iowa	37.8	34.9	28.1	23.8
Indiana	30.0	28.6	25.4	23.7
Ohio	28.4	27.5	22.9	19.3
Wisconsin	13.9	13.5	11.4	9.1
Nebraska	38.2	36.9	24.7	18.0
Missouri	29.9	30.5	26.8	27.3
Minnesota	21.0	17.3	12.9	9.2
Kansas	36.8	35.2	28.2	16.3
South Dakota	24.6	21.8	13.2	3.9 ¹
Michigan	16.0	15.9	14.0	10.0
North Dakota	14.3	8.5	6.9	3.9 ¹

Throughout this period the relation between value of land and the rate of tenancy has been substantially as shown for 1910 above. It will be noticed that the slight decline in tenancy for Missouri during the past

¹ For Dakota Territory.

ten years is the only instance of the kind occurring in the group during the thirty years.

The close relationship between value of land and rate of tenancy is even more strikingly brought out by a comparison of groups of counties within a state than in the comparison of one state with another. Within the state of Illinois, in a block of fourteen counties where farms are reported at \$150 or more per acre, there was ten years ago 50.6 per cent of tenancy. In these counties at the present census there is 54.7 per cent of tenancy. Not only is the amount of tenancy high, but it is increasing rapidly, more rapidly than in other parts of the state. In another block of nineteen counties, in which the value of farms is less than \$50 per acre, in 1900 there was 27.8 per cent of tenancy, while now there is 29.7 per cent. This is but about two-thirds the proportion of tenancy for the whole state, and the rate of increase is below that for the state. The same general conditions prevail in Ohio, which we may view from a little different standpoint so as to include all farms of the state. It is found that in thirty counties in the eastern and southern parts, having an average valuation for farms of \$60, or less, per acre, the per cent of tenancy ten years ago was 19.5; at present it is 20.8; not a great change for the period, and a low proportion in each case. In the remaining two-thirds of the state, the per cent of tenancy in 1900 was 30.9, while in 1910 it was 33 per cent. It is just here, roughly the middle of Ohio from north to south, that we find the pronounced break in the tendency of farms to slip out of the hands of the owners and into the possession of tenants, for from this line to the east tenancy declines, while to the west, at least to the Rocky Mountains, ownership declines.

The same relationship between values and tenancy may be seen in Missouri, where in sixteen counties in the northwestern part of the state with values of \$60 and over per acre there is 33.5 per cent of tenancy. This is well above the general average for the state and is slightly above the per cent for the same counties ten years ago. In the northeastern part of the state a like number of counties with values below \$60 stood at 27.0 per cent in tenancy in 1900, but fell to 24.6 per cent by 1910. In Indiana the nineteen counties in which farms are worth, per acre, \$100 and up have 36 per cent of tenancy. The twenty-five counties with values at \$50 and below have 21 per cent of tenancy. These groups happen to be, respectively, about equally above and below the average values and average tenancy for the whole state.

More examples might be given, but so far as the writer has made the test, the general relationship holds within each state. That it will hold where other conditions are equal seems to be beyond controversy. It does not always hold good from one state to another nor even within a given state, because of varying conditions; yet the exceptions are comparatively infrequent.¹

Not only has tenancy either decreased, or increased at a relatively slower rate, in all parts of the North Central states where the price of land is below the average, but the actual number of tenants has in many instances decreased. That is to say, some farms which had been worked by tenants have passed into the hands of owners, tho in more cases, as in such pioneer sections as southwestern Kansas, the lower proportion of tenancy is due, not to this move-

¹ See article on "Tenancy in Iowa," Quarterly Publications American Statistical Society, March, 1911.

ment, but to the development of new farms operated by owners, the tenant farms holding their own in numbers or even increasing. Or the tenants may have decreased, but not so fast as the owners, such being the case in the high-priced sections of Illinois, and in half or more of Iowa. This of course means a decided increase in the size of farms. In the thirty counties of Ohio having farms under \$60 per acre on an average there was a decrease of more than 1800 in the number of tenant farms, while in the rest of the state there was an increase in this class of over 2900. In both cases the number of land-owning farmers decreased, giving as a net result a number of farms for the state smaller by about 5300 than ten years ago. As a matter of fact the farms increased in size in all states of this group except South Dakota, but the increases were far from uniform over the states. In those districts in which the system of farming seems to be undergoing little change, an increase in the proportion of tenancy seems as a rule to be associated with an increase in the size of the farm. A gain in ownership, on the other hand, is associated with a change in the opposite direction or with absence of change. This does not hold good in districts where, for example, great wheat farms are being broken up into smaller ones; for here the first result is an increase in tenancy.

Values of land and size of holdings are by no means the only factors in the tenancy problem. Among others it may be mentioned that the character of the farming done is not the same in the case of the tenant and the land-owning farmer. In this North Central group of states, according to the census of 1900, the tenants had charge of more than their proportional number of farms on which hay and grain were the prin-

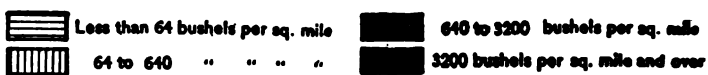
cial products. On the other hand, they had little more than half their proportion of the live stock farms. These two classes of farms comprise the greater part of all farms in this section; hence in the proportional distribution of these farms between owners and tenants is seen the leading characteristics of tenant and land-owning farmers, so far as the general type of agriculture is concerned. The tenant raises grain to sell; the land owner more often raises it to feed to live stock. The tenant produces but three-fourths of his proportional share of hay and forage, and this corresponds almost exactly to the proportion of the cattle which he owns. In the ownership of sheep he is even farther behind the land-owning farmer. Yet in the case of swine he has his full quota, and here is an exception to the generalization that the tenant raises grain to sell; tho he does this to a great degree, he feeds a great many hogs.

The leading cereals of the North Central states are corn and wheat, together constituting about four-fifths the value of all cereals. The tenants grow only two-thirds of their share of the wheat, yet they exceed by one-third their proportional share of the corn. In the case of wheat, the conditions vary widely from state to state. In several of the distinctively wheat-growing states the tenants are growing more than their proportional share, leaving them with much less in the other states. With corn the conditions are more uniform, the tenant raising throughout proportionally more than the land owner. The less usual crops, such as vegetables, fruit, and tobacco, are grown mainly by the land-owning farmer. Couple with these facts of tenancy, — the prevalence of grain growing in general, and of corn growing in particular, and the scarcity of cattle and sheep, — the charac-

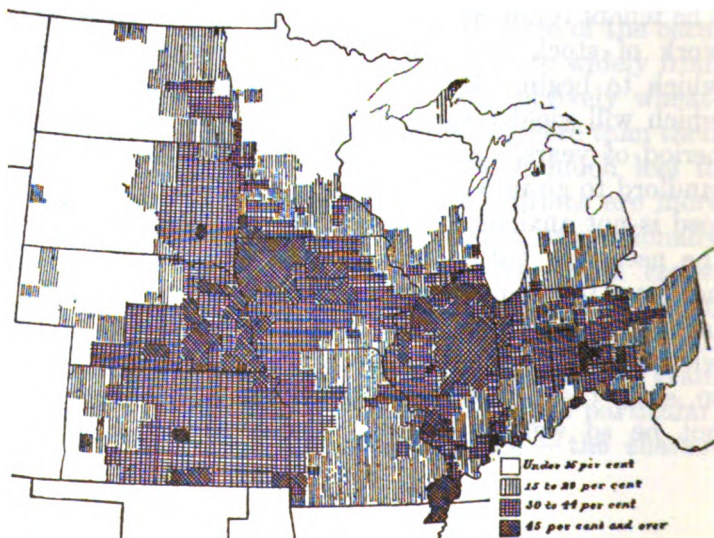
teristics of the tenant farm itself. There is the same value in land per acre, and not far from the same number of acres; but the buildings are worth but five-sixths as much as on the farm occupied by its owner. In implements and machinery the tenant has a little less than his proportional share; tho this is due in the main to the fact that he is less in need of such things as haying tools, corn binders, or milk separators than is the land owner. Tenants are seldom handicapped by lack of implements. The tenant farmer himself is much younger than the owner; he stays on the same farm not to exceed about a third as long a period of time as does the owner. These facts are all significant. They picture a farmer with a poor outfit of buildings, with comparatively little grass land, with little live stock, giving his attention to the growing of grain to be hauled immediately to market. The one exception to this condition is the feeding of much of his corn to hogs.

If these conditions are accurately outlined they present a reason other than the high price of land for the concentration of tenancy on the better land. The tenant is not equipped for doing the more exacting work of stock farming. He lacks the capital with which to begin. He wishes to engage in a business which will yield returns during the year, not after a period of years. Again, he is not encouraged by his landlord to go into live stock to any extent; the landlord is not anxious to put a great deal of money into the necessary barns, silos, and fences. Even should he have the opportunity to raise stock on a given farm, the probability that he will be obliged to move within a short time is a discouragement against doing so, since the next farm he takes will in all likelihood not be so well equipped. In one respect landlord

PRODUCTION OF CORN PER SQUARE MILE



The absence of shading indicates the unsettled area



PERCENTAGE OF TENANCY, 1910

and tenant seem to be agreed, — they want prompt returns on the outlay. These conditions cause the tenant to gravitate toward the section where the type of farming for which he is fitted, and which meets his needs, can best be done. This means a district adapted to the growing of grain, especially corn.

That tenants are prevalent in the heart of the grain-growing section may be seen from the maps on page 722. The striking similarity of a tenancy map and a cotton area map for the South has often been noted. The relation of the corn belt to the density of tenancy in the North has not attracted so much attention. The map showing the corn belt is from the census of 1900, while that showing tenancy is for 1910. There is, however, no serious incomparability on this account, since the corn-belt outline is quite stable. The resemblance between these two maps, even as they stand, cannot escape notice; and yet, as it happens, they are so constructed as to cover up certain coincidences. For example, the corn map shows the same density for northeastern Missouri and southern Iowa as for the greater portions of Iowa and Illinois, while the fact is this section had just barely enough corn to admit it to the first class. On the other hand, a considerable number of counties within this area were just low enough in tenancy to drop them into the lower class on the tenancy map. A map more carefully shaded (as might be done by the dot system of mapping) would show a closer relationship than is here brought out. The other important instance, aside from the one mentioned, in which the two maps do not correspond, is the projection of the dense tenancy area into southwestern Minnesota and eastern South Dakota. This is a region in which the acreage of corn has increased rapidly during the past ten years;

therefore a map showing the corn area up to date would correspond much more clearly with the tenancy map than does the one given. The same is true to a smaller degree of the southern limits of the corn belt, both corn and tenancy having moved in that direction. In Kansas and Nebraska, especially, the tenant is a corn grower, being decidedly low in live stock and hay production and, in Kansas especially, low in wheat production.

It is not intended to suggest that there is any magical connection between tenancy and the growing of corn. The connection is very much unlike the relation of tenancy to cotton growing. It would seem to be due more to the failure, perhaps the inability, of the tenant to enter the more profitable business of stock raising than to any other cause. True, in some cases the landlord requires the tenant to grow corn and deliver it to him at market price, in order that he may have a supply for feeding stock, and also in order to keep his land in better condition than it would be with small grain growing; but these cases are surely not very common. The tenant is the type of farmer to prefer the extensive to the intensive system of farming. In the northwestern part of this section, where corn has not proved a profitable crop, and yet where land has advanced rapidly in price, the tenant farmer is a wheat grower. This may be seen on the map if the wheat section of the Red River Valley be kept in mind, for over a considerable portion of this valley the tenancy shading is noticeably dark. These are the two sections, the corn and the wheat areas blending into each other, in which a simple exploitative system of farming is possible. Here tenancy is not only high, but is on the increase at a rapid rate.

Around the outside of this great area there is not the opportunity to plant and reap on a wholesale plan.

There is a great difference between the eastern and southern parts of Ohio and the rest of the state in respect to soil and topography, and the line of the division shows plainly on the tenancy map. In the southern and eastern portion, with its hilly land, wheat and corn are not grown in great quantities. It is here that sheep raising and dairying are common, neither of which businesses predominates amongst tenants. These businesses are not adapted to the ability of the tenant; the soil is not adapted to the crops which he prefers. It seems that a diversified type of farming is all but inevitable in a district of this kind. Again, this is not the land to rise in price as does the richer and smoother land, and so does not get beyond the reach of the farmer in price per acre. The advantage of the large holding is less than in the case of land adapted to the growing of grain, thus contributing another factor toward keeping the value of the farm unit from rising too high for the farmer of moderate fortune. In Michigan, where tenancy is low, farming is diversified. Fruit growing is prevalent, in some counties great quantities of potatoes are raised; dairying, and sheep raising predominate in others. All of these facts apply to Wisconsin, which among the older states has a lower rate of tenancy than any other in the middle West. Wisconsin is preëminent in the dairy business, but ranks comparatively low in grain. Unquestionably there are other factors than those here discussed which must receive attention in a treatise on tenancy. Among these is the matter of nationality of the farmer, — and the affinity for land of the Germans and Norwegians, so numerous in Wisconsin, is proverbial.

Passing to Minnesota, the chances for long furrows and a smaller variety of operations for a given farm increase greatly. And immediately tenancy is more frequently found. In a few of the choicest counties forty-five per cent and over of the farmers are tenants. Why, it may be asked, since wheat farming is of the extensive sort even more than corn, does not the same amount of tenancy develop in connection with it? The answer is not difficult. Up to the present time wheat has been a pioneer crop. It has been raised for a comparatively few years, ten, twenty, or thirty, after which it fails to yield as well as before, and is followed by a more diversified system of agriculture. During the wheat régime the value of the land is low. There is other land not very different which can be homesteaded, or bought at government price, or on long time from a railroad company. While these conditions obtain there are indeed always a great many speculators, non-resident landholders, who would be glad to let their land on almost any terms. But the farmer can buy for himself, and does, but no one can be found to take the speculator's land.

Ten years ago there was very little tenancy in North Dakota. At present there is a great deal in the eastern part of the state; but the western half is a poor place to hold land with the expectation of lively competition for it on the part of tenants. The same is true to a much smaller degree of western Nebraska and Kansas. These states, with land lower in price than that of Iowa, have about the same proportion of tenancy. Here again is the contrast between the more and the less diversified farming. It is not certain diversified agriculture cannot develop in these states, as in those to the east of them; but it is certain that for the present they lend themselves more readily to

exploitation under a one-crop or two-crop system. Here, especially, the tenant keeps few cattle or sheep, produces far less than his proportional part of the hay, but gives his attention primarily to producing corn and hogs. Everything is favorable for a high rate of tenancy. The land is too dear in price for the poor man's pocketbook. It is level, uniform, and easy to till. Moreover it is held in large tracts, making it easy for the tenant to get in one block all he can cultivate. Under the system of farming here practised these large units are more efficient than smaller ones, but the great size is in itself a factor, in addition to the high price per acre, precluding ownership by a man of small means. In these states, as in the others previously noticed, high prices of land and high tenancy go together, and low prices and low tenancy together. In Kansas where the land values are fairly uniform over a considerable part of the state, tenancy shows a similar uniformity. In Nebraska, where the range of prices is much greater, there are many more counties in each of the extreme groups, all of the conditions of high tenancy being present in the eastern part of the state and the low values excluding it from the western part.

Turning to Missouri the conditions are essentially different. The whole south central part of the state is broken and hilly. Thus it is quite well adapted to fruit growing and diversified farming, but poorly adapted to the cultivation of the cereals on a large scale. Hence tenancy here corresponds to that of Wisconsin, Michigan, or eastern Ohio, in contrast to that of the leading grain-growing districts. This land is still largely undeveloped, is low in price, and is therefore in great measure either occupied by its owner or not at all. Southern Illinois and Indiana

are likewise not so well adapted to grain farming. Here again, with the smaller farms, and the still smaller fields, combined with low prices of land, the conditions are favorable for ownership which is, as previously stated, relatively high.

From two different standpoints, then, the same facts are discovered. High price of land and high rate of tenancy go hand in hand, likewise low price of land and low rate of tenancy. Yet it does not follow that the one condition is the sole cause of the other. The American farmer has been slow to adopt a diversified system of farming. Labor has been the scarce factor, and therefore the dear one. The great desideratum has been a system which required the minimum amount of labor, and since land has been the plentiful agent, it has been exploited as tho it would continue to yield crops gratuitously for all time. With the growth of population and the consequent demands for more foodstuff the value of land has followed the rise in the prices of its product. But the land which responds best to immediate demands rises most. As a result the fertile land capable of producing good crops without the use of high-priced fertilizers, or great outlay for drainage, rises first and highest. And while this movement is in progress there is a process of natural selection by which the less efficient farmers are shifted to the cheaper land of the outlying districts; or if they remain, they, or more likely their sons, are within their own neighborhoods relegated to the class of tenants. Speculation is still prevalent in the sections of high-priced land, and is a great factor in keeping the price so high that ordinary commercial returns cannot be made on the investment except by men and methods above the average. This is in itself one of the primary causes

of tenancy. Such a sifting and shifting does not take place in the sections where land is less well adapted to exploitation and less attractive to speculators; hence the less efficient may retain ownership. At the same time the type of farming adapted to these sections favors the efficient.

These conclusions are borne out by the fact that within the districts of high-priced land the farmers practising the intensive methods or the rational method of diversification are those who in great measure own the land they till. In the parts of Iowa, for example, where dairying is most prevalent, even tho the price of land is high, tenancy is relatively low. The same is true of the intensive farming, such as truck and fruit growing. It can be done, and is done, on high-priced land without the aid of a separate landlord class. Hence the conclusion seems inevitable that the system of farming is a factor equally important, if not more important, than the price of land in turning the scale in favor of ownership or in favor of tenancy. Those who engage in what is called the mining type of farming are losing their hold on the soil. Those engaged in a more profitable type are retaining it to a much greater degree. Whatever forces raise the value of land make greater demands on the farmer who aspires to its ownership. Whatever increases the efficiency of the farmer makes ownership more probable. The extensive pioneer methods of farming succumb in the face of great waves of rising prices.

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THE CHECK-OFF SYSTEM AND THE CLOSED SHOP AMONG THE UNITED MINE WORKERS

SUMMARY

The check-off system now in general use by the United Mine Workers, 730. — Why the operators have granted it: a precedent in the existing check-off for supplies, and in the presence of the check-weighman, 731. — History of the check-off system for union dues, 734. — Its main features, 735.— The unions' "card day" done away with, 737. — Effect of the check-off in strengthening the union, 738.— It acts to bring about virtually, tho not formally, the closed shop, 739.

SINCE the adoption of the joint agreement system between miners and operators in 1898, the United Mine Workers' organization has put into general effect an important and unusual method of collecting union dues from its members. This it has accomplished by the help of the individual operator, who deducts or checks off from the wages of his employees the union dues subscribed by them to the union. After deducting these dues at the company office on payday the operator turns over the amount collected to the officers of the local union. The arrangement exists at present between union miners and operators in fourteen or more coal-producing states.¹ Such proof of the friendly relation between miner and operator is worth more than passing notice, especially when one considers the bitter conflicts which have occurred in the past between capital and labor in the country's coal industry.

Why have the operators granted this remarkable concession to the United Mine Workers? Has it been solely because of the increasing strength of the organization?

¹ As to the adoption of the check-off in other industries, see an article in the Johns Hopkins University Circular, 1910, No. 4, describing its operation in the window glass industry, and in certain garment workers' shops in Baltimore.

In attempting to answer these questions, we find that other factors than the numbers and influence of the miners' union contributed.

First of all, the union representatives found a precedent for their demand in circumstances peculiar to the mining industry itself. Before the introduction of the check-off for union dues operators were already in the habit of making deductions from miners' wages on pay-day, after the manner of the proposed check-off, for house rent, supplies, and the like. The following list of such items is taken from a Pennsylvania miner's due-bill, as it is called:¹

Supplies	\$8.25
Blacksmith.....	.30
Rent	6.00
Groceries	20.18

The item "Supplies" indicates that the miner was indebted to the operator for powder and oil; the remaining charges, that he had his tools sharpened or repaired by the company blacksmith, that he rented a dwelling house owned by the operator, and bought groceries at the store so frequently located on company property and managed directly or indirectly by the employer. Still other items are found in coal miners' due-bills in the different states. Monthly payments are made toward the maintenance of a hospital conducted by the operator for the benefit of injured employees, and for the support of a school which is under the operator's management. Regular contributions to accident and death benefit funds appear.² These items, it should be borne in mind, are typical not only of present but also of past conditions in the coal industry. They are practically fixed charges, determined by the conditions of employment; for the mine worker in many cases is shut off from the life of the ordinary community and

¹ Roberts, *Anthracite Coal Industry*, p. 148.

² At certain Pennsylvania mining properties controlled by a single company the miner's contract provided that contributions to the local clergy and taxes were to be deducted from his wages on pay-day. *Proceedings of Anthracite Coal Strike Commission*, No. 1973.

becomes correspondingly dependent on his employer.¹ In some instances the indebtedness indicated by such charges even exceeds the miner's monthly wages. He then receives what is familiarly termed by the anthracite workers a "bob-tailed check."

As already stated, these deductions from the miners' due-bills gave a precedent for demanding the check-off for union dues. The United Mine Workers' representatives based their arguments in part upon the circumstances already outlined, declaring that the check-off should be accepted as were deductions for other purposes; namely, as a condition of employment.² The operators replied that the check-off for union dues would be illegal, and that there was a possible element of compulsion involved in its operation. The answer of the miners' representatives was that, if the check-off was illegal, then the deductions already made by the operators were also illegal; and they said in effect that the operator himself exercised compulsion over his employees, especially in making deductions for "store" charges, and this even when a miner signed an order requesting his employer to make such deductions. The operator in many cases practically forced the miner to agree to make purchases at the company store if he wished to secure employment at a particular mine. As will be seen later, the miners' representatives, in order to secure the check-off, were willing to furnish the operators with a written order from each miner requesting that deductions be made for union dues. As for "store" charges, the miners have generally maintained, and with reason, that the operator usually secures a direct profit from the company store.

One other circumstance in the coal-mining industry before the introduction of the check-off strengthened the

¹ The check-off is in operation under similar conditions in the brick-making industry. At Thurber, Texas, a local of the Brick, Tile, and Terra Cotta Workers' Alliance has secured the check-off by agreement with the operator of the brick yard, who practically owns the town, its stores, etc.

² Proceedings Interstate Joint Convention, 1901, p. 105 ff.

miners' position in their demand for this method of collecting union dues. This was the establishment of the office of check-weighman, whose duties are, in brief, to protect the miners' interests in the screening, weighing, and "docking" of coal by the company. He takes his place at the company scales and checks up the work of the docking boss or company weighman. He is generally chosen from among the employees at the particular mine and his salary is paid by the miners. For our present purpose the importance of the check-weighman lies in the fact that his salary has been collected, and this in one of two ways: either by the contribution of a certain amount of coal from each miner, the total amount so contributed being credited to the check-weighman's account by the company, just as in the case of the individual miner with his own output; or by a deduction made from each miner's wages on pay-day, after the manner of the check-off. Thus a certain portion of the miner's earnings was already deducted by the operator for a purpose wholly in the interest of the former.

It is difficult to state with accuracy to what extent the introduction of the check-weighman helped to bring about the check-off for union contributions, and this point should not be unduly emphasized. The mine workers did not everywhere secure the services of the check-weighman, even after the passage of state laws establishing his office, for, as was natural, many operators in the different states strongly opposed his introduction. However, we learn from the Bureau of Labor and Mining Reports of Ohio, Illinois, and Pennsylvania that previously to the adoption of the check-off, check-weighman laws had been passed and that check-weighmen were to be found at certain mines in these states. In Ohio such a law was passed in 1872, in Pennsylvania (bituminous) in 1873, and in Illinois in 1883. It is also significant that in at least ten other states check-weighman laws were passed before the check-off was granted, as follows: In Indiana in 1883; Iowa, 1880; Kentucky, 1886; Tennessee and Missouri, 1887; West

Virginia, 1891; and subsequently in Kansas, Arkansas, Michigan, and Montana.¹

The United Mine Workers' organization was not the first to introduce the check-off in the coal industry, for it was advocated as early as 1889 by Ohio members of the old National Progressive Union. According to the Report of the Ohio Bureau of Labor of that year, the latter organization demanded it in two different strikes affecting five mines in the state; in one instance asking for "the check-off — granted to us as before May 1, 1889," and in the second, the "usual check-off for the State levy made by the Progressive Union."

In 1890, when the United Mine Workers first became of importance as a national organization, its representatives secured the introduction of a clause in the agreement between miners and operators of the Hocking coal regions in Ohio, which stated that the check-off was to be "restored by the companies where it does not exist." In the early 90s the check-off was in force at certain mining properties in Ohio, Illinois, and Indiana, but its adoption was not general. In 1898, the date of the first interstate joint conference held between the United Mine Workers and coal operators of the so-called Central district, which comprises Ohio, Indiana, Illinois, and Western Pennsylvania (bituminous), the check-off was introduced in the state agreements made by members of this conference, with the exception of that for Western Pennsylvania. With this exception it has remained in the agreements to the present time. In 1898 certain operators of Kentucky also granted the check-off. In Western Pennsylvania (bituminous) the check-off has not been generally accepted in the state agreements. Yet in 1902 it was in force at about fifty mines.² In the an-

¹ At the present time, the check-weighman's services have come into much more general use. In several states he directly assists in the operation of the check-off for dues, by preparing the list of miners' names whose contributions to the union are to be deducted at the company office. This he is able to do to advantage while at his post at the company weighing scales.

² Proceedings Interstate Joint Convention, 1902, p. 119.

thracite region of Pennsylvania, the only general concessions obtained by the miners regarding the collection of union dues were those made in accordance with decisions of the Conciliation Board established by the Anthracite Coal Strike Commission. By these decisions representatives of the United Mine Workers were permitted to collect dues from its members on company property at the different mines. In July, 1909, however, the United Mine Workers' Journal announced that the check-off had been granted at one of the mines run by an independent operator. In 1899 the check-off appeared in the agreement between coal operators and the United Mine Workers covering the newly organized "South Western Territory" (Missouri, Kansas, Arkansas, and Indian Territory) and, after the year 1903, continued up to the present time. In 1900 and thereafter the check-off is found in the Tennessee state agreements; in 1901 and thereafter in Kentucky; in 1902 and thereafter in Iowa and Michigan; in 1903 in West Virginia (suspended in 1906-08); in 1904 and thereafter in Wyoming; and in 1907 and thereafter in Montana. The check-off is now prevalent in at least fourteen different states. These are Illinois, Indiana, Ohio, Pennsylvania (bituminous), Kentucky, Tennessee, Iowa, Michigan, Kansas, Arkansas, Missouri, Oklahoma, Montana, and Wyoming.

The main features of the check-off, as it appears in its most complete form, are illustrated by the Illinois agreement for 1908-10. The operators agree to "check-off union dues, assessments, and fines from the miners and mine laborers, and on proper individual or collective continuous order. After the pit expenses for powder, smithing and a proper proportion of mining tools," preference will be given to the "ordinary dues and assessments." The check-off is "not to exceed \$5.00 in any one pay for fines and initiation fees unless by special agreement." A detailed statement is to be furnished by the operator giving the total amount collected, also the names of miners whose dues have not been collected. Any fine imposed under the agreement may be appealed and "withheld by the

operator " until the matter has been adjusted. "Card day " (to be explained presently) is abolished.

The "individual or collective continuous order" is made out in legal form by attorneys representing the operator and by the union officials. The writer is informed, however, on good authority, that for the past few years in Illinois, the individual miner has not been required to sign an order. It has been customary for the union officials at a particular mine simply to hand in a list of names of employees whose dues are to be checked off. Of the thirteen other states in the list referred to above, all but two, Michigan and Ohio, require by the terms of agreement either an individual or collective order, to be given continuously or on demand. In Western Pennsylvania (bituminous), in 1904, the check-off was granted where approximately 80% of the employees at a particular mine were in favor of this method of collecting union dues and then only upon written individual order from each employee.¹

What advantages, now, did the operators secure by conceding the check-off? First of all, they directly assisted the miners' union in obtaining funds with which to unionize non-union fields. By thus requiring competitive operators to enter into state or interstate agreements, they equalized conditions.² Further, by refusing continuance of the check-off the operators were able effectively to discipline the union. A committee appointed at a national convention of coal operators' associations in 1905 recommended the introduction of a provision in joint agreements to the effect that in case of a local strike in violation of contract, the check-off should be suspended at a single mine, or if necessary over an entire district, for a period of at least

¹ Proceedings Interstate Joint Conference, 1904, p. 127.

² In response to the operators' demands for the unionizing of mine labor in West Virginia the union representatives asked that they be furnished the necessary funds through the extension of the check-off in the Pittsburgh field. Proceedings Interstate Joint Convention, 1901, pp. 58-59. Proceedings Interstate Joint Convention, 1902, p. 62.

thirty days; and this provision was subsequently adopted in modified form by a national association of operators.¹

By granting the check-off the operators also did away with the abuse of "card day." Formerly on "card day" a union representative stationed himself at the shaft entrance of a mine and required that each miner produce his union card before going to work. In this way the union official was able to find out whether an employee was a member of the union or not, and from the entries on the card, whether the member had paid his dues in full. This practice, however, might hinder the proper working of the mine, for, according to one informant, a mine employee in Illinois who could not give a satisfactory account of himself when interviewed might be sent home by the representative of the union. If the employee chanced to hold an important position in the mine, carman for example, his enforced absence from work might seriously cripple the working of the mine. Evidently, if the check-off was conceded, the union official could at once dispense with "card day."

To offset these advantages, the operators were forced to recognize the obvious fact that, in granting the check-off, they were assisting in building up a defence fund for the union to be used in time of strike or lock-out, or, in other words, they were "cutting their own throats."² The force of this objection may be seen when it is stated that according to the secretary-treasurer's report of the United Mine Workers over \$5,900,000 was paid out for "aid" by that organization from the years 1900 to 1908 inclusive.³ Moreover, the individual operator might be sued for damages by a miner who wished to recover through the courts

¹ Justi, *Papers and Addresses on Labor Problems*. In 1908 the Indiana Coal Operators' Association temporarily suspended the check-off throughout the state because of an alleged illegal stoppage of work by miners at a single mine. Bureau of Labor Report, Indiana, 1907-8, p. 112. Proceedings United Mine Workers' Convention, 1909, vol. 1, p. 596.

² Proceedings Interstate Joint Convention, 1902, p. 67.

³ Proceedings United Mine Workers' Convention, 1909, p. 93.

union dues checked off against him.¹ Finally, the operators found that they were arbitrarily restricting the supply of labor by collecting a high initiation fee for the union through the check-off. With the evident purpose of offsetting this tendency there is occasionally in state and district agreements a restriction of the initiation fee to a uniform rate of from \$2.00 to \$10.00. In certain instances, however, the union set the initiation fee, at least temporarily, as high as \$50.00.

For the United Mine Workers the check-off brought with it a large increase in funds, which strengthened each local body as well as the central organization. It had another and surprising result, and one which the union leaders could scarcely have foreseen: they obtained the aid of the operators in disciplining members of their own organization. In the Illinois joint convention of 1902, a representative of the miners stated that in many cases local union officials were unable to keep members in line and that if the agreements were to continue it would be of advantage not only to the union but to operators as well, if the individual operator were to check-off fines imposed upon organization members.² Naturally enough, however, the operators refused to go so far as to deduct fines for offences imposed contrary to the terms of the joint agreements.

In spite of all its advantages for the union, the wisdom of the check-off system may be criticised from the point of view of the union itself in one particular. As its opponents among the operators declared, it was a poor union member who would not make payments voluntarily and had to be forced to do so. Evidently, however, the United Mine Workers cannot afford to stand on sentiment on this point. They have accepted the check-off as inevitable under pres-

¹ In one instance an Indiana operator was sued by four miners on this account and had to spend \$500 in his defence. *Proceedings Interstate Joint Convention, 1901*, p. 111. In another instance, when miners protested to the operator against the collection of union dues through the check-off, the union refunded the amount so collected. *Proceedings Interstate Joint Convention, 1903*, p. 67.

² *Illinois Joint Convention, 1902*, pp. 226-227.

ent conditions of employment in the coal industry. The miners' representatives themselves have admitted the difficulty of securing regular payment of dues. As is well known, members are inclined to contribute to the union only at "strike time," tho such a policy would be fatal to the life of a national organization. For example, the members of the United Mine Workers, or miners controlled by that body in the anthracite fields of Pennsylvania, numbered 150,000 at the close of the anthracite strike of 1902; by November, 1904, this number had dwindled to less than 40,000.¹

Moreover, miners are continually shifting from one mine to another in different parts of the country and there is a continual influx of Southern-European labor, which is difficult to unionize. These facts must tend to confirm the union representatives in adherence to their present policy of demanding the check-off.

The logical outcome of the check-off is the closed shop. Even in its partial enforcement it tends to produce closed-shop conditions. It has already been indicated how this comes about; first from the continued pressure brought to bear on a minority of non-union miners by the majority of union members at a particular mine, and, secondly, from the continued favor shown toward union labor by the operators under the system of joint agreements. Under these conditions non-union men may be forced gradually to submit to the check-off for union dues, as they do to wage deductions for other purposes, because it becomes almost a condition of employment. Especially is this true when the operator no longer demands the individual written order for the check-off but accepts the list of employees' names given him by the union officials, thus removing the single protection afforded non-union workers.

Two effective arguments were used by the miners' representatives in the convention of the Central district in favor of enforcing the check-off upon all employees eligible to membership in the United Mine Workers, and

¹ F. J. Warne, *The Outlook*, Dec. 16, 1905.

for the resulting closed-shop conditions. One was that under the terms of the state agreements their organization was obliged to become responsible practically for the conduct of every miner and mine employee working under such agreements.¹ Moreover, they declared, all miners, whether union or non-union, who were working under joint agreements, were benefited thereby and should pay a fair share of the expense necessary for their maintenance by contributing union dues.² This latter argument is very similar to one used by Judge Gray in his decision confirming the action of the Anthracite Board of Conciliation regarding the payment of the check-weighman's salary. Judge Gray held in effect that, since all the miners at a particular mine profited by the check-weighman's services, the minority of miners should submit to the will of the majority and should also pay their share of that official's salary.³

To what extent do we in fact find the closed shop in the coal-mining industry? There is evidence to show that it exists in Illinois and that there is an approximation to it in at least two other states, Indiana and Ohio. As regards Illinois, we have the statement of Mr. Justi, in 1903, that, with the exception of one mining property, there was "not a single non-union miner or mine laborer" in that state.⁴ At the present time we learn on good authority that altho the closed shop has not been conceded to the miners by actual terms of contract in Illinois, the question has been settled practically in favor of the miners. In fact, the Illinois Operators' Association is now trying to secure the closed shop "on the other end," that is, to obtain an agreement with the United Mine Workers, under the terms of

¹ Proceedings Interstate Joint Convention, 1902, p. 56.

² Proceedings Interstate Joint Convention, 1904, p. 133.

³ Scranton Tribune, Sept. 27, 1904.

⁴ Mr. Justi also said, in making the above statement, that closed-shop conditions existed in Illinois as a consequence of the union rules of apprenticeship, which required the miner's preliminary service at the mine for a term of at least four years. This, however, does not invalidate the statements made as to the general influence of the check-off in bringing about the closed shop. Proceedings Interstate Joint Convention, 1903, p. 80.

which that organization shall effectively prohibit its members from securing employment with the few small operators in the state who have not yet joined the coal operators' association. In addition the writer was informed that if non-union labor were introduced at present in mines in Indiana and Ohio, union miners would at once go on strike. An Indiana operator also declared in 1906 that the United Mine Workers had a tacit understanding with the operators of that state that non-union labor should not be employed in the mines.¹

It appears, then, that the check-off was advocated under circumstances peculiar to the coal-mining industry and that as its adoption spread with the growth of the joint agreement system between miners and operators in bituminous coal producing states, it assisted quasi-automatically as a "union organizer" toward bringing about closed-shop conditions. Probably its greatest significance to the United Mine Workers lies in the fact that when operated under the terms most favorable to the union, as in Illinois, it is a factor of the first importance in obviating the necessity of a formal demand for the closed shop.

F. A. KING.

¹ Proceedings Interstate Joint Convention, 1906, p. 190.

NOTES AND MEMORANDA

THE *RÉGIE INTÉRESSÉE DU GAZ* AT PARIS

THE exclusive monopoly granted in 1855 to the Paris Gas Company expired at the end of the year 1905. The fifty-year franchise had proved defective in several respects, and during the latter part of the concession the relations between the company and the municipality had been strained. Opposition in the municipal council to further private monopoly of the gas supply was sufficiently strong to prevent the issue of a new franchise to the old or any other gas company. Political conditions in the French parliament prevented the adoption of a policy of municipal ownership and operation, or, as the French would say, *régie directe*. The result was the adoption of a peculiar compromise, to which the French give the name of *régie intéressée*.

This compromise vests the title to the gas plant in the municipality. The operation of the plant, together with an interest in the profits, is confided to a general operator or *régisseur*. Yet the arrangement cannot accurately be described as a lease. The municipality not only has prescribed in advance a schedule of rates and a procedure for the division of profits but also has retained the power to alter the rates, as well as the scale of wages and general conditions of employment. The discretionary authority of the *régisseur* is so restricted, and the procedure for the division of profits so peculiar, that the arrangement partakes less of the nature of a lease than of direct municipal operation. Indeed the *régisseur* may be regarded as a public business manager, employed under a profit-sharing plan, designed to afford him an incentive to the exercise

of the same personal initiative as under private ownership. The circumstance that the arrangement was satisfactory to the opponents of direct municipal operation indicates at least that it apparently preserved the reputed advantages of private enterprise in the supply of gas.

This plan is sufficiently interesting to merit more detailed notice. By its terms the management of the gas service in Paris was to be entrusted for a period of twenty years to the most favorable bidder. This personage was to organize a company and raise a working capital of thirty million francs. Five millions of this should be deposited with the municipality as security for the fulfilment by the company of its obligations. All additional capital should be raised as required by the municipality itself. The operating company should defray all operating expenses, maintenance charges, and taxes out of the proceeds of the sale of gas. Eventual differences of opinion as to which items should be charged to operating expenses, and which to the capital account, should be determined by the prefect after a hearing at which both parties, that is, the company and the municipality, should be represented. Elaborate provisions were made to avoid any such misunderstandings at the commencement of operations, or subsequently. The price of gas was fixed at the beginning at 15 centimes per cubic metre for gas consumed for municipal purposes (the same price as that established in 1855), and at 20 centimes for other gas (two-thirds of the price established for private consumers in 1855). This price should be reduced by not less than one-half of one centime per cubic metre whenever it should appear that the share of the profits accruing to the city from the operations of the preceding year would have been more than twenty million francs, had the reduced rate been in effect throughout that year. How this share of the profits should be computed will be explained directly.

Before the operating company might lay claim to any profits, it must first provide (a) for the interest and amortization of the loans made by the municipality for the pur-

pose of reducing the price of gas in 1903 and of acquiring the gas company's equity in its plant in 1906; (b) for the interest and amortization of any additional loans that might be made to finance the future expansion of the gas system; (c) a sum sufficient to bring the return on the five millions of securities deposited by the company with the municipality up to five per cent; and (d) a sum equal to one-twentieth of the profits of the operating company, to be set apart as a reserve. The surplus receipts, or net income, should then be divided between the company and the municipality in the following manner:—first, the company should receive a sum sufficient to pay five per cent on that part of its capital not deposited in the form of securities with the municipality. This sum, however, would be diminished, if the company should fail to supply gas of standard purity, pressure, and illuminating and heating power, or fail in certain other respects properly to fulfil its obligations towards the municipality. Secondly, whenever the conditions for the reduction of the price of gas should be fulfilled, even if the city should not choose to take advantage of that fact and demand a reduction of the price, the company should receive a supplementary sum of 150,000 francs per annum thereafter until the end of its term, nor might such supplementary sums be thereafter diminished if the share of the profits accruing to the city should for any cause fall below twenty million francs, unless it should fall below sixteen million francs. In that event, all supplementary payments to the company must be suppressed. If the net income of the city from the gas service should fall below fourteen million francs, the return to the operating company upon its capital must be reduced from five to four per cent. Thirdly, the rest of the receipts of the company, after the preceding payments have been made, must be paid to the municipality as its share of the profits. Finally, the city reserved the right to denounce the arrangement at certain specified dates before its expiration upon payment of a stipulated indemnity to the company.

Apparently all possible contingencies were anticipated and provided against. The arrangements for the sharing of profits and the reduction of rates are certainly ingenious. Yet no ingenuity can anticipate the unpredictable. If the unexpected should happen, the city has in reserve one drastic means of protection in its power of repurchase. That the arrangement was satisfactory to investors is attested by the fact that no less than thirteen bids were received from prospective *régisseurs*. The successful bidder obtained from the municipality an assurance that any additional charges which might arise through the increase of wages or improvement of the conditions of employment would be met by the city itself. This bidder was selected from among five who submitted equally favorable bids by the device of requiring each to send in a sealed proposal offering to relinquish a percentage of the supplementary profits to be earned by eventual reductions in the price of gas. The competitor consenting to relinquish the largest percentage was awarded the prize.

This arrangement was the culmination of a long experience with public service corporations on the part of the municipal authorities of Paris. They were among the first deliberately to choose the policy of regulated private monopoly in such businesses as the supply of gas, and under Napoleon the Third special limited franchises were granted to the leading public service corporations of Paris, providing for the most effective control that his skilled prefects could devise. The French have been reluctant to abandon this policy of controlling monopolistic corporations through the instrumentality of special limited franchises, yet the necessity of more effective control has forced the development of the gas franchise into this peculiar form of a *régie intéressée*. This probably illustrates the kind of arrangement that any municipality is likely eventually to reach, which refuses to accept a policy of direct municipal operation, or of effective control through a public service commission. The disadvantages of the *régie intéressée* as a mode of control are obvious. That it possesses any com-

pensating advantages over the alternatives of municipal ownership and direct municipal operation or regulation by a commission remains to be demonstrated. The chief significance of the arrangement lies in the evidence it affords of the failure of the policy of control through limited franchises.

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PROGRESS OF THE AUTOMATIC LOOM

Among the recent inventions of cotton-mill machinery none is more significant than the automatic loom. In spite of the scepticism still shown in certain quarters, the day for the general acceptance of some type of automatic loom for weaving cotton cloth appears to be close at hand. An automatic loom, it may be explained, is one in which the shuttle, which carries the weft or thread crosswise of the cloth, is either automatically replenished or automatically replaced, without assistance from the weaver or stoppage of the machine. It thus becomes possible for a loom, barring accidents, to run continuously, instead of being brought to a standstill each time the thread on the bobbin in the shuttle is exhausted. In the ordinary loom, a fresh bobbin must be supplied every seven or eight minutes; hence stops are frequent. In the following paragraphs the recent progress of automatic looms is outlined and points of interest to economists are indicated.

The history of automatic looms centers around the Northrop invention developed by the Draper Company of Hopedale, Massachusetts. The Northrop loom, as offered to the trade in 1894, was the result of the efforts of five inventors, deliberately applied for fifteen years to the task of rendering practical the ideas brought to this country by Northrop. It has been described in a previous article;¹ hence it is not

¹ M. T. Copeland, *Technical Development in Cotton Manufacturing since 1860*, *Quarterly Journal of Economics*, November, 1909.

necessary to repeat the details. Suffice it to say that by January 1, 1911, approximately 200,000 Northrop looms had been installed in over three hundred American cotton mills¹ and several thousand in European mills. One other American automatic loom has secured acceptance on a limited scale; still others are on trial.

In Europe the appearance of the Northrop machine has roused widespread interest, but its high price has caused many manufacturers to seek a cheaper substitute. The extensiveness of these researches is indicated by the fact that during the past year no less than eight types of automatic looms, all of domestic manufacture, have been seen by the writer in European cotton mills.² This probably does not exhaust the list, since several of the looms were in use only by the manufacturers who had invented them, and it is reasonable to suppose that other experiments are being carried on semi-secretly in mills not visited. It seems to be the consensus of opinion that the Northrop loom is the best, altho a few of its competitors are said to possess certain points of superiority.³

All these looms, however, are suitable for weaving only plain cloth and fabrics with stripes or figures formed by manipulation of the warp threads. It has been a more serious problem to devise a means for automatically supplying weft to a drop-box loom, which uses filling of several colors. A drop-box loom has two or more shuttle boxes, according to the number of colors of weft yarn. The boxes are placed vertically, one above the other, and their movement is made to conform to the details of the pattern which is being woven.

¹ Data furnished by the Draper Company.

² Three were English, three German, and two French. Still another automatic loom, of Swiss origin, is mentioned by Mr. Besso, *Cotton Industry in Switzerland and Italy*, p. 38.

³ The machine brought out two years ago by the *Elsässische Maschinenbau Gesellschaft*, Mülhausen, for example, has a new form of magazine from which the shuttle is filled. It is so placed at the end of the loom that it does not obstruct the weaver's view. Moreover, it is detachable so that it can be taken off to be mechanically refilled by a boy or girl. The weaver is thus relieved of all work even in replenishing the magazine and can tend more looms.

The best known cloths woven upon drop-box looms are checks and gingham. Some of these fabrics have very narrow weft stripes; hence the failure to change shuttles at exactly the proper moment, the passage of an empty shuttle, or the insertion of a thread of the wrong color would produce a noticeable and serious fault. These stringent requirements and the multiplicity of shuttle boxes were obstacles in the path of an automatic drop-box loom. Nevertheless, the difficulties have been overcome.

In 1895, immediately after the appearance of the Northrop loom, Crompton and Knowles, loom manufacturers of Worcester, Massachusetts, began to experiment with automatic gingham looms. The first patent was taken out by Charles Crompton and Horace Wyman, and in 1905 a few such machines were placed in operation. During the following five years continual refinement and alteration materially improved this loom, which is adapted to the use of "filling of different colors inserted at predetermined intervals, and equipped with the necessary detector and safety devices to admit of weaving practically perfect goods."¹

The first examples of these automatic drop-box looms were equipped with circular revolving magazines, from which the bobbins were supplied to the shuttles and in which the bobbins were arranged in such an order that the machines always took yarn of the proper color. This form of magazine has been discarded, however, in favor of a vertical stationary magazine provided with a separate section for each color of weft yarn. Similarly, the original electrical detector has been largely supplanted by a mechanical detector which feels the amount of thread on the bobbin at each passage of the shuttle. When the bobbin is nearly depleted another of the same color is automatically selected from the magazine. Yet it cannot always be immediately introduced into the shuttle, since the pattern may demand the shuttle from another box for the next pick. Consequently the selected bobbin is held in suspense until the shuttle for which it is intended again comes into action. The parts work in

¹ Quoted from a circular issued by the company.

unison, so that a fresh bobbin cannot be placed in the wrong shuttle. Several of the patents of the Northrop loom were utilized for the new gingham loom, and great credit is due to that pioneer work. On the other hand, the conquering of the difficulties peculiar to an automatic drop-box loom is an achievement of the first order.

The automatic gingham loom runs at least as fast as the ordinary loom employed for similar work, namely, 165 picks per minute, and occasionally exceeds that speed by five picks per minute. Therefore there is no loss in that direction. Moreover, the automatic loom is more constantly in operation, inasmuch as it does not stop each time a bobbin is empty. Thus there is a closer approach to the highest possible productivity. Of even more importance, particularly to American manufacturers, is the reduction in the amount of attendance required. In this country a weaver usually tends six ordinary drop-box looms. With the automatic loom the number is at least doubled and in some instances reaches sixteen per weaver. Altho a recent innovation, one mill already has two thousand of the new looms at work and several other manufacturers have ventured to try them.

With the introduction of the Crompton and Knowles loom, one may prophesy that eventually all types of loom employed in cotton mills will be provided with automatic weft-changing devices. The history of the power loom in the nineteenth century is being repeated by the automatic loom in the twentieth century.

For the economist the history of the automatic loom illustrates several principles. In the first place it shows the efforts to relieve pressure at the point in a cotton mill where the expense for labor has been highest. The readjustment of piece rates has reduced by one half the labor cost of weaving. The improvements in the mule, the ring frame, and the preparatory machines had already cut down the expense for labor in those departments, thus making the outlay for labor in the weaving department more conspicuous, until that too was diminished by the automatic loom. In the

second place, the flexibility of demand and the limits to monopoly power are indicated by the attempts to find a substitute for the Northrop loom. The ownership of the Northrop patents brings about a monopoly and the price of the machine is high.¹ Hence the European manufacturers are seeking a less expensive substitute. Thirdly, the use of the automatic loom will very likely cause greater standardization and specialization in weaving mills, since it is not economically advantageous to employ a weaver upon looms weaving several patterns. Hitherto, in fact, the introduction of the Northrop loom into Europe has been retarded by the practice among the European manufacturers of accepting so many relatively small orders that it is frequently impossible to avoid employing one Northrop loom weaver upon fabrics of several designs. The advantages attendant upon a more extensive use of the automatic loom, therefore, will foster standardization and specialization. Finally, the history of automatic looms tends to disprove the theory that inventions are sporadic products. All the advances in automatic looms have been the results of prolonged efforts consciously directed toward a specific end. The possibility of automatic looms had been broached prior to 1880, but it was not till the need became acute that the task was undertaken in an effective manner. That these contributions have been made by Americans is largely due to the greater premium which our higher wages have placed upon labor-saving devices.

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¹ This statement does not necessarily imply that the price is higher than is warranted by the expense and risk of the long period of experimentation.

APPENDIX

THE GERMAN INCREMENT TAX LAW OF FEBRUARY 14, 1911¹

SEC. 1. When the title to parcels of land lying within the country shall be transferred, a tax shall be levied upon that increase in the value of the land which has arisen without the proprietor's having contributed thereto.

If the selling price of the land, or the total value of the land, in case only a part of the land is sold, shall not exceed, for improved property 20,000 marks, and for unimproved property 5000 marks, the transfer shall not be subject to the tax. Unimproved land shall include also land upon which there are gardenhouses, sheds, lumber and coal yards, and similar structures serving temporary purposes. Exemption from the tax shall hold only if the seller and his spouse have not in the previous year had an income of more than 2000 marks, and if neither of them is engaged in real estate operations as a business. If it shall appear that the sale has taken place on behalf of a third person, then exemption from the tax shall be granted only if the conditions for exemption apply also to the third person.

SEC. 2. The provisions of this law concerning real property shall apply to rights and claims to which the provisions of the civil code, applicable to real property, apply; but shares in mining property having the character of realty shall be exempt.²

SEC. 3. Of the same sort with the transfer of property in land is held to be the transfer of rights in the property of partnerships and association,³ . . . so far as the property is composed of land, if either the utilisation of the land is one of the objects of the enterprise or if the association is created in order to evade the increment tax.

¹ Translated by Dr. R. F. Foerster.

With the text of the German Act comparison may be made with the corresponding provisions in the British Finance Act of 1909-10, which imposes taxes on increment values as well as on undeveloped land and on mineral rights. The text of the British Act being comparatively easy of access to American students, it has not been thought necessary to print that also. A convenient edition is *The (1909-10) Finance Act, "The Budget,"* with introduction and notes by W. H. Aggs; London, Sweet & Maxwell, 1910.

² This provision refers to certain forms of mining property, remnants of ancient methods in the exploitation of mines.

³ The various kinds of partnerships and associations are enumerated in this section.

SEC. 4. The obligation to pay a tax shall be established by the registration of the change of legal title in the registry of deeds [*Grundbuch*], or if registration shall not be necessary to the conveyance, by whatever action effects the change of legal title.

So far as the system of title registry shall not yet be in full operation, record of the transfer in public books shall take its place.

SEC. 5. If the actual change of ownership shall not take place within one year after the conclusion of the transaction calling for a transfer of ownership, then the increment tax shall be levied as a consequence of the transaction; and in case several transactions of this kind shall have been effected within the one-year period, the tax shall be levied as a consequence of the last transaction.

The obligation to pay the tax conformably to paragraph 1, shall begin with the lapse of one year after the conclusion of the selling transaction; the assessment of the tax shall have reference to the date on which the legal transaction, or in the case of a series of legal transactions the last of these, was concluded.

The following shall also be considered as legal transactions in the sense of paragraph 1: —

1. the transfer, by sale, of the rights of those who have acquired land;
2. the transfer of rights through offers binding on the seller; likewise through contracts by which the seller only is obligated to conclude a sale;
3. subsequent declaration by a purchaser, who has received a title in a transaction of sale, that he has acquired the title for a third person, or has assumed the obligations of a third person;
4. the relinquishment of rights by the highest bidder in an auction, and his declaration that he has bid on behalf of another person;
5. legal transactions by which a person is empowered to sell upon his own account a piece of land entire or in part.

SEC. 6. Taxation shall not be precluded by the fact that a transaction, taxable according to this law, shall be concealed under another legal transaction; especially not by the fact that, in lieu of the transfer of property, a legal procedure shall take place making it possible for a person without transfer of property, to deal with a piece of land as an owner would.

SEC. 7. The increment tax shall not be collected: —

1. in the case of acquisition through death in the sense of sections 1 to 4 of the Inheritance Tax Law, and in the case of acquisition by gift among the living in the sense of section 55 of the Inheritance Tax Law, so far as the form of gift is not expressly chosen to avoid the increment tax;
2. in the case of the establishment, alteration, continuation, and dissolution of the joint property of married persons;

3. in the case of acquisition through contracts concluded between co-heirs or sharers of a marital or inherited joint property for the purpose of a partition of the objects composing a legacy or a joint estate; likewise in the case of acquisition by purchase at auction, when that method shall be resorted to in the cases above named to give a title to a co-heir or a sharer;
4. in the case of acquisition by descendants from parents, grandparents, and more distant progenitors;
5. in the case of acquisition by a company composed exclusively of the seller and his descendants, or of the latter alone, and organized according to the civil code, or an association of the kind specified in section 3. The obligation to pay a tax shall arise if subsequently the company is made to include a member who is not a descendant of the seller;
6. in the case of acquisition of inherited property in a company composed exclusively of co-heirs and organized in accordance with the civil code, or in an association of the kind specified in section 3 (the provision of clause 5, sentence 2, shall apply);
7. in the case of exchange of parcels of land situated within the country for the purposes of rearrangement in larger units [*Zusammenlegung*], of the regulation of boundaries, or of the better configuration of cultivable areas [*Umliegung*], likewise in the case of the liquidation of rights to forest lands, when these measures rest on the demand of a public authority or are approved by such an authority;
8. in the case of the exchange of parts of fields between adjoining mines, and in the case of the merger of two or more mines for the purpose of their better exploitation, in so far as exchange or merger shall not be effected for the purpose of the evasion of the tax.

A surviving spouse who must share a joint property with the heirs of the deceased spouse shall be accounted a co-heir in the sense of numbers 3 and 6.

SEC. 8. The taxable increment shall consist of the difference between the purchase price and the selling price.

The price shall be determined according to the total amount of the consideration, including whatever obligations shall be assumed by the purchaser or shall fall to him in consequence of the sale, and including the usufructs reserved by the seller or appurtenant to the land; and in the case of contracts for services to be accepted toward payment, the price shall include the value at which the stipulated services shall be rated.

If one of the parties to the contract shall be given an option or authorization to specify within a given time the amount of the consideration, then the possible highest amount of the consideration shall gauge the amount of the tax.

SEC. 9. In the case of a transfer secured at auction the price shall be held to equal the amount of the highest bid, through which the purchase shall be effected, and there shall be added the obligations taken over by the purchaser. In case the highest bidder relinquishes his rights and declares that he has bid for another, then the value of the consideration, if higher than the highest bid, shall take the place of the highest bid.

SEC. 10. From the price shall be deducted the amount of the encumbrances assumed by the seller, of the machine equipment, including any which may be fixtures on the property, and further the amount of the growing crops.

SEC. 11. If a price shall not have been agreed upon or cannot be ascertained, then the value of the land shall be substituted for it.

The same shall hold when there shall go with the land one of the authorisations specified in section 2, or a right to usufruct, to whose removal the seller is not obligated, and when at the same time the value of the land shall exceed the amount of the consideration. When, in order to evade the tax, the parties shall disguise a part of the compensation in the form of a commission fee, or shall charge, upon a postponed payment of the price, a rate of interest exceeding the usual rate, or shall otherwise disguise the consideration, then an amount to be fixed by appraisal shall be added as a part of the consideration.

SEC. 12. In cases in which a value must be fixed in order to calculate the tax, the appraisal must have reference to the ordinary value of the land. The provision of section 8, paragraph 3, shall apply.

The value of recurring services or easements shall be fixed according to the provisions of the Inheritance Tax Law.

SEC. 13. If the taxable legal act shall have reference to both taxable and tax-exempt objects, and individual prices or values shall not be announced, then the tax authorities shall fix the part of the total sums ascribable to the taxable objects; if the persons obligated to pay the tax shall not within a prescribed term report the division of prices or values. If, in order to evade the tax, incorrect statements shall have been made, the amount is to be fixed by valuation.

The same shall hold for the division of the total amount among several taxable objects.

SEC. 14. To the purchase price there shall be added: —

1. a commission for the acquisition of the land (unless its value takes the place of the purchase price) of four per cent of the purchase price and, in case the purchaser shall have demonstrably paid a higher amount, including the local customary commission, this higher amount;
2. in case the land shall have been acquired at judicial sale at auction, and the present seller was at the time of the forced sale a mortgagee, the demonstrable amount of his defaulted claims up to the value which the land had at the time of the forced sale or, if the value shall have been higher at the

time of the registration of the claims, up to the value which it had at that time. If the claims were incurred in a legal transaction involving a consideration, they shall be regarded to the amount only of the consideration. If they shall be based upon a gift, or if they shall have been registered within a shorter time than six months before the beginning of the forced sale, then the claims shall be held valid only if in the circumstances gift or registration shall not have been intended as means of escaping the tax;

3. expenditures for buildings, alterations in buildings, and for other special permanent improvements, including such as have to do with agriculture and forestry, and expenditures for exploration and permanent equipment in mining, which have been made within the time to which the tax applies, and do not refer to the items to be deducted in accordance with section 10, nor serve for the current maintenance of structures, nor for the current utilisation of land, so far as the buildings and improvements shall still exist. Further there shall be added five per cent of the calculable value of the expenditures, or if the seller is a builder or a building workman and has himself erected the buildings, fifteen per cent. But this provision shall not apply if the builder is a company within the meaning of the commercial code, or is an association not composed exclusively of building contractors or building workmen. Expenditures covered by insurance when devoted to the restoration of buildings which had been erected before the time included in the calculation of the tax, shall not be regarded as expenditures in the sense of this provision;
4. expenditures, services, and contributions for road construction, other transportation improvements including river improvements [*Kanalisierung*] and contributions for other public improvements rendered without due compensation and interest payment, so far as the expenditures, services, and contributions shall have been incurred in the period of time for which the tax is calculated. For every complete year of this period after the close of the calendar year in which the expenditures have been made or the services or contributions rendered, at the most however for fifteen years, four per cent of their amounts shall be added. On demand of the seller, in place of this interest addition, there may be added, conformably to the provisions of section 16, paragraph 1, number 1, an amount not exceeding the highest amount there indicated, taking into account also the expenditures defined in number 4, or an amount equal to the excess sum defined in paragraph 1, number 2, of that section.

Sec. 15. In so far as the improvements in question have to do with moor, swamp, waste, or heath land, then upon demand of the seller there shall be added to the purchase price, instead of the expenditures

designated in section 14, number 3, the increase in the value of the land based on its product [*Erhöhung des Ertragswerts*].

SEC. 16. To the purchase price there shall be added, for every year of the period for which the tax is calculated:—

1. two and one-half per cent of the sum total of the purchase price and the additions according to section 14, numbers 1 to 3, and section 15, so far as the sum does not exceed one hundred marks per are or in the case of vineyards three hundred marks per are¹;
2. in the case of unimproved land, two per cent, in the case of improved land one and one-half per cent of the excess above this sum.

If the period for which the tax is calculated shall not exceed five years, the additions in the case of land that has remained unimproved shall be reduced to one half.

The addition shall be reckoned for every complete calendar year after the conclusion of the year in which the tax liabilities accrued, or in which the expenditure was made, or the buildings or remodellings were completed for use.

SEC. 17. If the acquisition of the land shall take place through a legal transaction exempt from the tax (section 7), the increment of value shall be reckoned from the price of the land at the time of the last taxable transaction.

Whether, within the meaning of this provision, legal transactions shall be tax-exempt or taxable shall be determined according to the present act for the period also before the act itself takes effect. Legal transactions of the kind specified in section 5 shall be treated as tax-exempt transfers so far as they were completed before January 1, 1911.

When the last taxable legal transaction shall have taken place more than forty years before an obligation to pay a tax arose, the purchase price shall be held to be the value which the land had forty years before that date, unless the person liable for the tax shall prove that he or his legal predecessor paid at a previous purchase a higher purchase price (whether taxable or tax free).

But if the acquisition from the date of which the increment of value is to be reckoned shall have taken place before January 1, 1885, there shall be substituted for the purchase price of the land the value which it had on that day, unless the person liable for the tax shall prove that he or his legal predecessor paid, at a previous purchase (whether taxable or tax free), a higher purchase price.

For the case specified in paragraph 3 the period for which the tax is calculated shall be the forty-year period; for the case specified in paragraph 4 the period shall be reckoned from January 1, 1885.

[SEC. 18. Contains a special provision regarding certain lands within the military bounds of fortresses.]

¹ The are [*Ar*] is 100 square metres or .024711 acres.

[SEC. 19. Contains provisions on land affected by *Flurbereinigung*, *Umlegung*, and the like. Cf. Section 7, paragraph 7.]

SEC. 20. If the taxable legal transaction is confined to a part of a piece of land, the purchase price of this part shall be calculated according to the proportion of its value to the value of the entire piece of land.

Permanent and uncompensated relinquishment of pieces of land for ways of communication, or for public or charitable ends, shall be so regarded that the total purchase price shall be distributed, not upon the original area, but upon the area remaining after the relinquishment. It is not essential that a transfer of title shall have taken place.

If parts of a landed estate which is a geographic and economic unit shall have been transferred by separate legal acts by the same seller or his heirs within a period of three years, then the person obligated to pay the tax shall be permitted to deduct from the increment of value of one part of the land a loss incurred through the sale of other parts. The increment tax shall be due for each of the transfers; should too large a tax have been collected, the excess shall be returned after the last transfer.

SEC. 21. When part of a property is sold, only those expenditures (section 14, numbers 3 and 4) shall be added which affect this part exclusively or affect it in common with other parts. In the latter case the addition shall be reckoned according to the relation in which the values of the respective parts stood to each other at the time of the sale.

SEC. 22. From the selling price there shall be deducted:

1. costs of the sale and conveyance, including the commission customary in the locality, if these costs have demonstrably fallen upon the previous owner; provided that the selling price of the land, not its value, is the basis for calculating the tax;
2. upon demand of the seller, that amount by which, during the period for which the tax is calculated, yet not for more than fifteen consecutive years, the yearly income of the land shall have been demonstrably less than three per cent on the purchase price including the additions permitted by section 14, numbers 1 to 3. If, instead of the purchase price, its value at a date later than the time of the acquisition of the land shall be the basis of the tax (section 17, paragraphs 3 and 4), the three per cent shall be reckoned not upon this value but upon the purchase price which the person liable for the tax, or his legal predecessor, paid at its purchase (whether taxable or tax free) at the earlier date.

SEC. 23. To the selling price shall be added any compensation paid for a diminution in the value of a piece of land; provided that the claim for such compensation has arisen since January 1, 1911, and it is proved that the amount has not been expended for the repair or removal [*Beseitigung*] of the damage caused.

SEC. 24. If by the terms of the contract of sale the obligation to pay the increment tax is assumed by the purchaser, an amount equal to the tax calculated according to the provisions of this Act shall be added to the selling price, and the tax assessed accordingly.

SEC. 25. In the case of the taxable conveyance of rights in a piece of land held in joint ownership to a person who is a part owner or member of the owning company, the share of the purchaser shall not be considered in measuring the increment of values. At the next taxable operation, the increment of value in the share of the purchaser and that in the share of his previous associates, which have accrued since the last taxable transaction before the separation of ownership, shall be taxed separately.

SEC. 26. In case of exchange of land the tax shall be separately assessed and levied for each item of land exchanged.

SEC. 27. If the land has been acquired as a result of several transfers from the former owner to the last purchaser, then the price paid by that former owner shall be deemed the purchase price, and the sum total of the amounts by which the price of the land has increased between each of the succeeding legal transactions shall be deemed the increment of value. The same shall hold if, before the transfer to the last purchaser, a tax has become due under section 5 of this Act; provided that the sum which was fixed as the selling price for the previous assessment shall be reckoned the purchase price for the transfer to the last purchaser.

Among legal transactions within the meaning of paragraph 1, shall be included transactions of the kind specified in section 5, paragraph 3.

SEC. 28. The tax shall be (the increment being calculated with the additions and subtractions prescribed in §§ 14-16, 21):—

10 per cent if the increment is not over 10 per cent								
11	"	"	"	"	between	10 per cent and	30 per cent inclusive	
12	"	"	"	"	"	30	"	50
13	"	"	"	"	"	50	"	70
14	"	"	"	"	"	70	"	90
15	"	"	"	"	"	90	"	110
16	"	"	"	"	"	110	"	130
17	"	"	"	"	"	130	"	150
18	"	"	"	"	"	150	"	170
19	"	"	"	"	"	170	"	190
20	"	"	"	"	"	190	"	200
21	"	"	"	"	"	200	"	210
22	"	"	"	"	"	210	"	220
23	"	"	"	"	"	220	"	230
24	"	"	"	"	"	230	"	240
25	"	"	"	"	"	240	"	250
26	"	"	"	"	"	250	"	260
27	"	"	"	"	"	260	"	270
28	"	"	"	"	"	270	"	280
29	"	"	"	"	"	280	"	290
30	"	"	"	"	more than 290 per cent.			

The tax shall be reduced by one per cent of its amount for every complete year of the period for which it is calculated. If the land was acquired before January 1, 1900, the reduction for the period up to January 1, 1911, shall be one and one-half per cent annually.

Taxes which in their entirety amount to less than twenty marks shall not be collected.

SEC. 29. Liability for the payment of the increment tax shall rest upon the person who owned the land before the legal transaction from which the tax arose. When the tax falls upon several persons they shall be jointly responsible.

If the tax cannot be collected from the seller, the purchaser shall be responsible for the tax to the amount of two per cent of the selling price. This provision shall not apply in the case of sale at auction. This liability shall cease when the seller has paid or guaranteed a corresponding amount.

SEC. 30. The following shall be exempt from the tax (section 29, paragraph 1):—

1. the sovereign [*der Landesfürst und die Landesfürstin*];
2. the imperial government;
3. the federal states and the communes (communal unions),
in the case of land owned by them within their several jurisdictions;
4. associations of all kinds which, without operating for profit, are devoted by their articles to internal colonisation, to the settlement of workmen on the land, to the relief from mortgage debt of the poorer classes, or the erection of dwellings for them; provided that they divide among themselves not more than a four per cent return upon their capital invested and provided also that they do not grant special advantages in a different form to their members, managers, or other participants or, in the case of the withdrawal of a member, or dissolution, do not return more than the par value of their shares, and in the case of dissolution devote any surplus to the above stated objects. Whether these conditions of exemption exist, shall be determined by the Bundesrat. The Bundesrat shall be further empowered to grant exemption from the tax to such associations of the aforesaid kind as pay at most a five per cent return upon their capital invested.

SEC. 31. Through legislation by the several states exceptions from the provisions of paragraph 1 of section 30 may be made in favor of the communes (communal unions). Wherever such statutory provisions already exist, they shall remain in force.

SEC. 32. If several successive legal transactions of the kind specified in section 5 precede (section 27) the occurrence of the liability to pay a tax, then all persons who take part as sellers in any one of these transactions shall be responsible for the tax jointly and severally with

the person immediately responsible. In the obligations of the participants among each other each seller shall be liable only to the amount for which he would be liable for tax if the transfer had taken place on the basis of a transaction of sale concluded by him.

If the taxable legal transaction has been undertaken with the collaboration of an agent, or through a middleman, with an agreement that any excess of the price above a stated sum shall go to these persons, then there shall be responsible, for the part of the tax due upon this part of the proceeds, the person who shall receive this part, jointly and severally with the seller.

If the taxable transaction has taken place before this Act goes into effect, the provisions of paragraphs 1 and 2 shall not apply.

SEC. 33. Any person who is liable for the payment of a tax according to the provisions of section 32, paragraph 1, may propose, within one month after the taxable transaction took place, the calculation and collection of the tax upon the increment of value which has accrued up to the time of that legal transaction.

Upon the next levying of the tax, the tax shall be assessed at that rate which would be applicable if this item of increment value were counted.

SEC. 34. If, in the case noted in section 5, the legal transaction involving tax liability is void or revoked, the tax shall upon application be remitted, under such regulations as the Bundesrat shall prescribe. The same shall hold if the legal transaction has been annulled or the property has been returned to its previous owner, because of failure to fulfil the conditions of the contract. Further, in case of a reduction of the price according to sections 459 and 460 of the civil code, the selling price shall be correspondingly reduced and the tax correspondingly refunded.

If the land is transferred back to its previous owner, the tax may be abated, under regulations to be prescribed by the Bundesrat. The tax must be abated if such a transfer takes place within two years after the sale.

If the tax is abated, no sale within the meaning of this Act shall be considered to have taken place.

SEC. 35. The administration and collection of the increment tax shall be in the hands of the federal state in which the land is situated.

The administration of the increment tax shall be through offices selected by the government of the state.

[SEC. 36. Regulates certain administrative relations between imperial and local authorities.]

SEC. 37. Every taxable transaction, and, in so far as an increase of price takes place, every transaction of the kind specified in section 5, shall be announced within a term of one month to the appropriate tax authority (section 35, paragraph 2). The obligation to do this shall rest upon the seller and upon the purchaser. If there are several

sellers or purchasers the obligation shall rest upon each of them. It shall apply similarly to their legal representatives.

The term shall begin at the time in which the person liable first learns of the taxable transaction or of the legal transaction.

An announcement shall not be necessary if, before the lapse of the term, declaration¹ or registration shall have taken place.

If several persons are obligated to make the announcement, then an announcement made by one of them shall fulfil the obligation of the rest.

SEC. 38. Information shall be communicated to the tax authorities, according to detailed regulations to be made by the Bundesrat by the following: —

1. the registries of deeds [*Grundbuchämter*] concerning the recording of transfers of property in land in the registry;
2. the registry courts and authorities [*Registerberichte und—behörden*] concerning entries subject to their jurisdiction;
3. in general the authorities and officials of the empire, states, and communes, including notaries,
 - (a) concerning all legal transactions attested by them which have to do with the transfer of property in land situated within the country or which have to do with the legal transactions designated in section 5;
 - (b) concerning all cases of the collection of a tax on the basis of schedule 11 of the imperial stamp act.

The state governments shall be authorized to extend, in agreement with the imperial chancellor, the obligation to supply information to other bodies than those named in paragraphs 1 and 2.

SEC. 39. Upon demand of the tax authority, and within a suitable period of time to be named by that authority, the seller obligated by section 37 to make an announcement shall make an increment tax declaration, setting forth the circumstances to be taken into account in fixing tax liabilities and the amount of the tax.

The tax declaration shall be submitted with the affirmation that the statements are correct to the best knowledge and belief of the declarer.

SEC. 40. If the tax authority is in doubt whether to accept as correct the statements in the tax declaration, it shall inform the person to be taxed of the points objected to, naming a suitable period for counter-declaration. If no counter-declaration ensues within the time established, or if the negotiations do not lead to an agreement, the tax authority shall be authorized, as further to be provided by the state government, to undertake itself the necessary inquiries and to collect the tax accordingly.

The costs of the inquiries shall be paid by the person obligated to pay the tax, if they lead to the final fixing of a tax which exceeds, by more than one third, the tax amount based on his statements.

¹ *Auflassung*: a joint declaration by the parties before a court.

SEC. 41. The authorities, officials, and notaries shall render every aid to the tax authorities for the ascertainment of the tax, and especially shall grant upon demand an examination of proceedings which bear on the assessment of the tax.

SEC. 42. Persons who as sellers or purchasers or as representatives of one of these take part in the taxable legal procedure, shall be required, upon demand of the tax authorities, to supply information concerning the facts which are significant for the assessment of the tax, and to submit whatever documents are in their possession pertaining to the assessment.

The same shall hold of persons who participated in previous taxable transactions.

SEC. 43. When the increment tax shall have been calculated, the tax authorities shall present a statement indicating what person is obligated to pay the tax, the amount of the increment tax, the bases upon which it has been calculated, and the points in which these differ from the tax declaration. The statement shall further indicate the permissible legal means of redress, the length of time in which these may be resorted to, and the authorities to whom they must be presented; and it shall contain a notice demanding the payment of the tax within an interval of time to be determined. The interval shall amount to at least one month.

[SEC. 44-47. Regulate the details of protests and appeals by persons who believe themselves wrongfully assessed for increment taxes.]

SEC. 48. In cases in which the immediate collection of the tax would entail considerable hardship [*erhebliche Härten*], a delay shall be granted, with sureties if needful, under regulations to be made by the Bundesrat; payment by instalments may also be permitted. The permission may be withdrawn in so far as the conditions for granting it have ceased.

SEC. 49. If the person liable to pay the tax is a German, the forced sale of his land at auction, to collect the tax, may not take place without his consent.

SEC. 50. Failure to comply with the obligation to make the increment tax announcement or declaration (sections 37, 39) is subject to a fine not exceeding four times the amount of the tax.

The same penalty shall apply to whoever knowingly makes incorrect statements such as might lead to a lessening of the tax.

The penalty shall not be applied, however, if the person makes good of his own accord his failure to fulfil the obligation mentioned in paragraph 1, or corrects his statements, before notification that the penalty has been imposed or before an investigation has been begun against him.

SEC. 51. If it shall appear that the punctual fulfilment of the obligation shall not have been neglected with intent to defraud the increment tax, or that the incorrect statements have not been made with

this purpose, there shall be substituted for the fine provided in section 50 a fine [*Ordnungsstrafe*] not exceeding 600 marks.

For other violations of the provisions of this law than those stated in section 50 and in paragraph 1. of this section, or for violations of the regulations made for its execution, there shall be imposed a fine not exceeding 150 marks.

SEC. 52. The collection of the increment tax shall take place irrespective of fines and penalties.

[SEC. 53-54. Regulate the collection of fines from partnerships and stock companies, and other penal details.]

In the case of partnerships, associations, and stock companies, the fine shall be levied upon the authorized representatives of the companies as a single amount, in the case of limited liability companies against their managers, in the case of coöperative associations, stock companies, and other associations having a legal personality, against the members of the directorate; but every person, tho jointly liable, shall be liable in full. A similar procedure shall be followed in other cases in which several persons have become liable to punishment jointly or as representatives of a party.

The provision of paragraph 2, sentence 1, shall have due application to the relation of a principal to an agent, who in his representative capacity, in the name of his principal, shall undertake a transaction involving punishment for violation of the law.

SEC. 55. A commutation of a fine which cannot be collected into a prison sentence shall not be allowed. Nor, if the convicted person is a German, shall his land be sold at forced auction without his consent.

SEC. 56. The administrative procedure in increment tax cases — apart from procedure for redress and punishment — shall be free of costs, of fee, and of stamp dues, so far as not otherwise provided in sections 40, paragraph 2, and 47, paragraph 2.

SEC. 57. The right to an increment tax shall lapse after ten years. The term shall begin with the close of the year in which the right to the tax set in; in the case of sureties (section 48), not before the end of the year in which the security expires.

SEC. 58. Of the yield of the increment tax the Empire shall retain fifty per cent. An additional ten per cent, so far as state legislation does not otherwise provide, shall go to the federal states as compensation for the administration and collection of the tax. Forty per cent shall go to the communes or communal unions in whose jurisdiction the land is situated. [Further paragraphs provide for cases of conflict between communes and communal unions.]

SEC. 59. With the permission of the state governments the communes (communal unions) shall be authorised to provide by ordinance, in addition to the share of the tax which according to section 58 goes to them, for the levy of supplements upon their own account.

The supplements shall be reckoned in percentual parts; in no case shall they exceed one hundred per cent of the amount going to the communes. The additions may be varied according to the different kinds of land and according to the length of the period for which the tax is levied.

The imperial tax and the supplements shall together not exceed thirty per cent of the increment.

SEC. 60. If in communes (communal unions) where an increment tax has been enacted before April 1, 1909, and has come into force before January 1, 1911, the share of the increment tax defined in section 58 shall not reach the average yearly amount yielded under the levy [*Satzung*] fixed before April 1, 1909, then up to April 1, 1915, the difference shall be deducted from the share falling to the Empire and added to the share falling to the communes (communal unions); of the remaining amount five-sixths shall fall to the Empire, and one-sixth to the federal state. The same shall hold for communes (communal unions) in which the levy fixed before January 1, 1911, shall have had retroactive effect for a period before April 1, 1909.

Instead of the payment of this difference, the previous levy may upon application (subject to regulations of the Imperial Chancellor) remain in effect for the indicated period of time, in place of the prescriptions of this law; in such way that the communes (communal unions) shall receive an amount equal to the average amount yielded before April 1, 1911, and any excess shall go to the Empire.

The determination of the average yield shall be made by the Bundesrat.

SEC. 61. For those parts of a federal state in which no separate communal organization exists, the provisions of section 58 to 60, intended for communes, shall apply to the federal state.

The provisions of section 60 shall apply to the federal states, the state law taking the place of communal ordinance.

SEC. 62. The obligation to pay a tax under this act shall apply to legal transactions which take place between December 31, 1910, and the time in which this law goes into effect. The provisions of section 29, paragraphs 2 and 3, shall not apply.

The day upon which this law goes into effect shall be the date when obligation to pay a tax and obligation to make announcement begin (section 37).

If in accordance with the provisions annulled in section 72, paragraph 2, on and after January 1, 1911, an increment tax has already been collected, it will be returned to the tax-payer, or, in so far as an increment tax is to be collected on the same legal transaction according to this Act, the amount paid shall be allowed for.

SEC. 63. No tax shall be levied under this Act if the deed or other document concerning the transfer of property shall, before January 1, 1911, have been drawn up in publicly attested form or handed in to a public authority.

SEC. 64. If a taxable transfer concerns land which has been acquired after March 31, 1905, by stock companies and the like associations described in section 3, then, in the case of purchases which shall have taken place before January 1, 1911, there shall be substituted for the purchase price the value of the land, in so far as this is inferior to the stated purchase price by more than 25 per cent and in so far as it shall not appear that the higher amount of the purchase price was intended to evade the tax.

[**SEC. 65.** Contains transitional provisions for the cases dealt with in section 7, paragraphs 3, 4.]

[**SEC. 66.** Authorizes the Bundesrat to make certain administrative and supplementary regulations, which are subject to veto by the Reichstag.]

[**SEC. 67-71.** Make amendments to the imperial stamp tax legislation designed to bring about consistency between the taxes under that legislation and the new increment tax. Among them is a provision (in section 69) by which the rates of stamp taxation are to be revised in case the imperial revenue from the increment tax exceeds, on a three-year average, the sum of 25 million marks. The taxes on entailed properties, levied in substitution for stamp taxes, are also amended.]

SEC. 72. This act shall go into effect on April 1, 1911.

The statutes of the states and the ordinances of communes and communal unions which have to do with the taxation of the increment in the case of sales of land, shall be null and void on and after January 1, 1911, except so far as they are maintained under section 60. Legal transactions begun before January 1, 1911, and the cases of the transfer of property mentioned in section 63, shall still be subject to the increment tax according to these statutes and ordinances, if the procedure for the determination of the tax is concluded only after the present law goes into operation.

BOOKS RECEIVED

- Ansiaux, M. *Principes de la Politique Régulatrice des Changes*. Bruxelles: Misch et Thron. 1910. pp. 259. (Instituts Solvay, Études Sociales.)
- Arminjon, P. *La Situation Économique et Financière de l'Égypte. Le Soudan Égyptien*. Paris: Librairie Générale de Droit et de Jurisprudence. 1911. pp. 708. 18 fr.
- Arnauné, A. *Le Commerce Extérieur et les Tarifs de Douane*. Paris: F. Alcan. 1911. pp. 534. 8 fr.
- Conway, T., and Atwood, A. W. *Investment and Speculation*. New York: Alexander Hamilton Institute. 1911. pp. 443. (Modern Business, Vol. VII.)
- Duguit, L. *Traité de Droit Constitutionnel: Tome I, Théorie Générale de l'État; Tome II, Les Libertés Publiques — L'Organisation Politique*. Paris: Fontemoing. 1911. pp. 570 + 558. 24 fr.
- Gibbon, I. G. *Unemployment Insurance. A Study of Schemes of Assisted Insurance*. London: P. S. King. 1911. pp. 354. 6s.
- Haney, L. H. *History of Economic Thought. A Critical Account of the Origin and Development of the Economic Thinkers in the Leading Nations*. New York: Macmillan. 1911. pp. 567. \$2.00.
- Hardy, E. R., and Lindner, W. *Insurance and Real Estate*. New York: Alexander Hamilton Institute. 1911. pp. 505. (Modern Business, Vol. VIII.)
- Hirst, F. W. *The Stock Exchange. A Short Study of Investment and Speculation*. New York: Henry Holt. 1911. pp. 256. \$.75. (Home University Library, No. 5.)
- Ilbert, C. *Parliament. Its History, Constitution and Practice*. New York: Henry Holt. 1911. pp. 256. \$.75. (Home University Library, No. 1.)
- Johnson, Alexander. *The Almshouse. Construction and Management*. New York: Charities Publication Committee. 1911. pp. 263. \$1.25. (Russell Sage Foundation.)
- Kantorowicz, H. U. *Rechtswissenschaft und Soziologie*. Tübingen: J. C. B. Mohr. 1911. pp. 35. M. 1.
- Kellicott, W. E. *The Social Direction of Human Evolution. An Outline of the Science of Eugenica*. New York: D. Appleton. 1911. pp. 249. \$1.50.
- Landa, N. J. *The Alien Problem and its Remedy*. London: P. S. King. 1911. pp. 327. 5s.
- Lavergne, B. *La Théorie des Marchés Économiques*. Paris: A. Rousseau. 1910. pp. 215. 4 fr.
- Lepelletier, F. *Les Caisses d'Épargne*. Paris: V. Lecoffre. 1911. pp. 243.
- Leeine, L. *Introduction Générale à l'Étude de l'Économie Politique*. Paris: F. Alcan. 1911. pp. 536. 10 fr.
- Levy, H. *Large and Small Holdings. A Study of English Agricultural Economics*. Cambridge (England): Cambridge University Press. 1911. 10s 6d. (Translated by Ruth Kenyon, with considerable additions by the author.)

- Lewinski, J. *L'Évolution Industrielle de la Belgique*. Bruxelles: Misch et Thron. 1911. pp. 444. (Instituts Solvay, Études Sociales.)
- List, F. *Das Nationale System der Politischen Oekonomie*. Jena: G. Fischer. 1910. pp. 552. (Sammlung sozialwissenschaftlicher Meister. III.)
- Macdonald, J. R. *The Socialist Movement*. New York: Henry Holt. 1911. pp. 256. \$.75. (Home University Library, No. 10.)
- McCall, S. W. *The Business of Congress*. New York: Columbia University Press. 1911. pp. 215. \$1.50.
- Mahaim, E. *Les Abonnements d'Ouvriers sur les Lignes de Chemin de Fer Belges et leurs Effets Sociaux*. Bruxelles: Misch et Thron. 1910. pp. 259. (Instituts Solvay, Notes et Mémoires.)
- Minnesota Academy of Social Sciences. *Papers and Proceedings of the Fourth Annual Meeting*. St. Paul. 1910. pp. 241.
- Perris, G. H. *A Short History of War and Peace*. New York: Henry Holt. 1911. pp. 256. \$.75. (Home University Library, No. 4.)
- Persons, C. E., Parton, M., Moses, M., et al. *Labor Laws and their Enforcement with Special Reference to Massachusetts*. New York: Longmans, Green. 1911. pp. 419. (Women's Educational and Industrial Union, Boston. Department of Research, Studies in Economic Relations of Women, Vol. II.)
- Ross, A. *Chile, 1851-1910. Sixty Years of Monetary and Financial Questions and of Banking Problems*. Valparaiso: Inglessa Westcott & Co. 1910. pp. 238 + iv.
- Scott, W. R. *The Constitution and Finance of English, Scottish, and Irish Joint-Stock Companies to 1720*. Volume III. Cambridge (England): University Press. 1911. pp. 563. 18s.
- Slosse, A., et Waxweiler, E. *Enquête sur le Régime Alimentaire de 1065 Ouvriers Belges*. Bruxelles: Misch et Thron. 1910. pp. 260. (Instituts Solvay, Notes et Mémoires.)
- Solenberger, Alice W. *One Thousand Homeless Men. A Study of Original Records*. New York: Charities Publication Committee. 1911. pp. 374. \$1.25. (Russell Sage Foundation.)
- Steiner, B. C. *Maryland under the Commonwealth. A Chronicle of the Years 1649-1658*. Baltimore: Johns Hopkins Press. 1911. pp. 178. \$1.00. (John Hopkins University Studies, Series XXIX, No. 1.)
- Tschierschky, S. *Kartell und Trust*. Leipzig: G. J. Göschen. 1911. pp. 195. (Sammlung Göschen.)
- Von Thünen, J. H. *Der isolierte Staat*. Jena: G. Fischer. 1910. pp. 678. (Sammlung sozialwissenschaftlicher Meister. XIII.)
- Wilcox, D. F. *Municipal Franchises. A Description of the Terms and Conditions upon which Private Corporations enjoy Special Privileges in the Streets of American Cities*. Vol. II. *Transportation Franchises. Taxation and Control of Public Utilities*. New York: Engineering News Publishing Co. 1911. pp. 885. \$5.00.
- *Verhandlung des Ersten Deutschen Soziologentages vom 19.-22. Oktober in Frankfurt a. M.* Tübingen: J. C. B. Mohr. 1911. pp. 334. M. 8. (Reden und Vorträge.)

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